



***Technical Report
Series***

Alberta
ENVIRONMENT

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**AIR QUALITY MONITORING
DATA SUMMARY FOR ALBERTA
1990**

Technical Report Series No. 92-2b

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This report is one in a series of air quality annual reports produced by Alberta Environment for 1990. The following air quality annual reports are available for 1990:

Summary of Air Quality Monitoring in Alberta: 1990.

Air Quality Monitoring Report for Alberta: 1990 - Technical Report Series No. 92-2a.

Air Quality Monitoring Data Summary for Alberta: 1990 - Technical Report Series No. 92-2b.

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LIST OF ABBREVIATIONS

Monitoring Locations

EDMU	- Edmonton downtown monitoring unit
ERMU	- Edmonton residential monitoring unit
EIMU	- Edmonton industrial monitoring unit
CDMU	- Calgary downtown monitoring unit
CRMU	- Calgary residential monitoring unit
CIMU	- Calgary industrial monitoring unit
EMMU	- Edmonton mobile monitoring unit (Fort Saskatchewan)
FMMU	- Fort McMurray monitoring unit
FRMU	- Fort MacKay monitoring unit

Pollutant Parameters

IQUA	- Index of the Quality of the Air
NH ₃	- ammonia
CO	- carbon monoxide
COH	- coefficient of haze
H ₂ S	- hydrogen sulphide
NO ₂	- nitrogen dioxide
NO	- nitrogen oxide
NO _x	- oxides of nitrogen
O ₃	- ozone
SO ₂	- sulphur dioxide
THC	- total hydrocarbons
TSP	- total suspended particulates
BaP	- Benzo (a) Pyrene
Pb	- Lead
VCM	- Vinyl Chloride Monomer

Units of Measurement

ppm	- parts per million by volume
ppb	- parts per billion by volume
ug/m ³	- micrograms per cubic meter
ug/1000 m ³	- micrograms per 1000 cubic meters
kg/ha/yr	- kilograms per hectare per year
mg/day/100 ²	- milligrams per day per 100 square centimeters
mg/100 ² /30 days	- milligrams per 100 square centimeters per 30 days
ug/100 ² /30 days	- micrograms per 100 square centimeters per 30 days
km/hr	- kilometers per hour
mm	- millimeters
ml	- millilitres
ueq/l	- micro-equivalences per liter
us/cm	- micro-siemens per centimeter

INTRODUCTION

This document is prepared as an appendix to the report entitled "Air Quality Monitoring Report for Alberta: 1990". Data summaries are presented for continuous, intermittent, static and acid precipitation monitoring networks operated by Alberta Environment.

a) Continuous Air Quality Monitoring

Air pollutants which are monitored on a continuous basis include ozone, carbon monoxide, the coefficient of haze, oxides of nitrogen, sulphur dioxide, hydrogen sulphide, total hydrocarbons and ammonia. Concentrations of these pollutants are reported once every hour, 24 hours a day, 365 days a year. In the continuous air quality data section of this report, the Index of the Quality of the Air, wind direction and speed, and concentrations of individual air pollutants are summarized. Individual air pollutants have been analyzed, on an annual, seasonal and monthly basis, to resolve simple statistics which describe the data. Seasons are defined as winter (December, January, February), spring (March, April, May), summer (June, July, August) and autumn (September, October, November) (Trenberth 1983). The subsequent pages contain the following information for each continuously monitored air pollutant: 1) percentiles (which indicate the percentage of observations above and below a specific percentile; i.e., 75% means that 75% of the observations are below the value indicated and 25% of the observations are above the value indicated); 2) simple statistics such as arithmetic and geometric means, arithmetic standard deviations, range, and the number of observations; and 3) the percentage of time that ambient parameter concentrations exceeded the regulations. Wind directions frequency distributions are generated for times when the regulations were exceeded. Annual average pollutant concentrations of historical data are also included. Statistical procedures used in this analysis are detailed in numerous statistics publications (refer to Zar (1974) and Gilbert (1987)).

Data below the limit of detection (LOD) is estimated by the method described in Gilliom and Helsel (1986). It is assumed that the air quality data above the LOD follows a lognormal distribution. The data below the LOD are fitted to this lognormal distribution by the method of least squares. Initially, normal scores are calculated for all data points above the LOD by the following equations:

$$z = F(y)^{-1}(r/n + 1); \text{ and}$$

$$F(y) = r/(n + 1);$$

where $F(y)$ is the cumulative frequency function for the standardized normal distribution,

n is the number of observations, r is the order of the observation from the LOD to n and z is the normal score. A least squares regression of concentration on normal scores is then applied. The data below the LOD may then be estimated by the linear regression equation. Percentiles and statistics are calculated from this modified distribution.

b) *Intermittent Air Quality Monitoring*

Intermittent air quality monitoring refers to air pollutants which are monitored as a 24-hour accumulated loading, once every sixth day, according to the National Air Pollution Surveillance (NAPS) system. Suspended particulates, Benzo (a) Pyrene and lead are monitored according to this system. Vinyl chloride monomer is also monitored on an intermittent basis in the Fort Saskatchewan region. Minimums, geometric means and maximum values are summarized by month for intermittent monitoring parameters. Annual average values of historical data are also provided.

c) *Static Air Quality Monitoring*

Alberta Environment conducts air quality monitoring, on a static basis, at approximately 70 networks throughout Alberta. Each network consists of at least one monitoring station. Static monitoring is the measurement of total accumulated loadings of pollutants on a one- and three-month schedule. Parameters monitored on a static basis include total sulphation, hydrogen sulphide, dustfall, calcium and fluorides. Static monitoring data are presented as monthly or tri-monthly average loadings for each location. The number of stations at each location is also indicated.

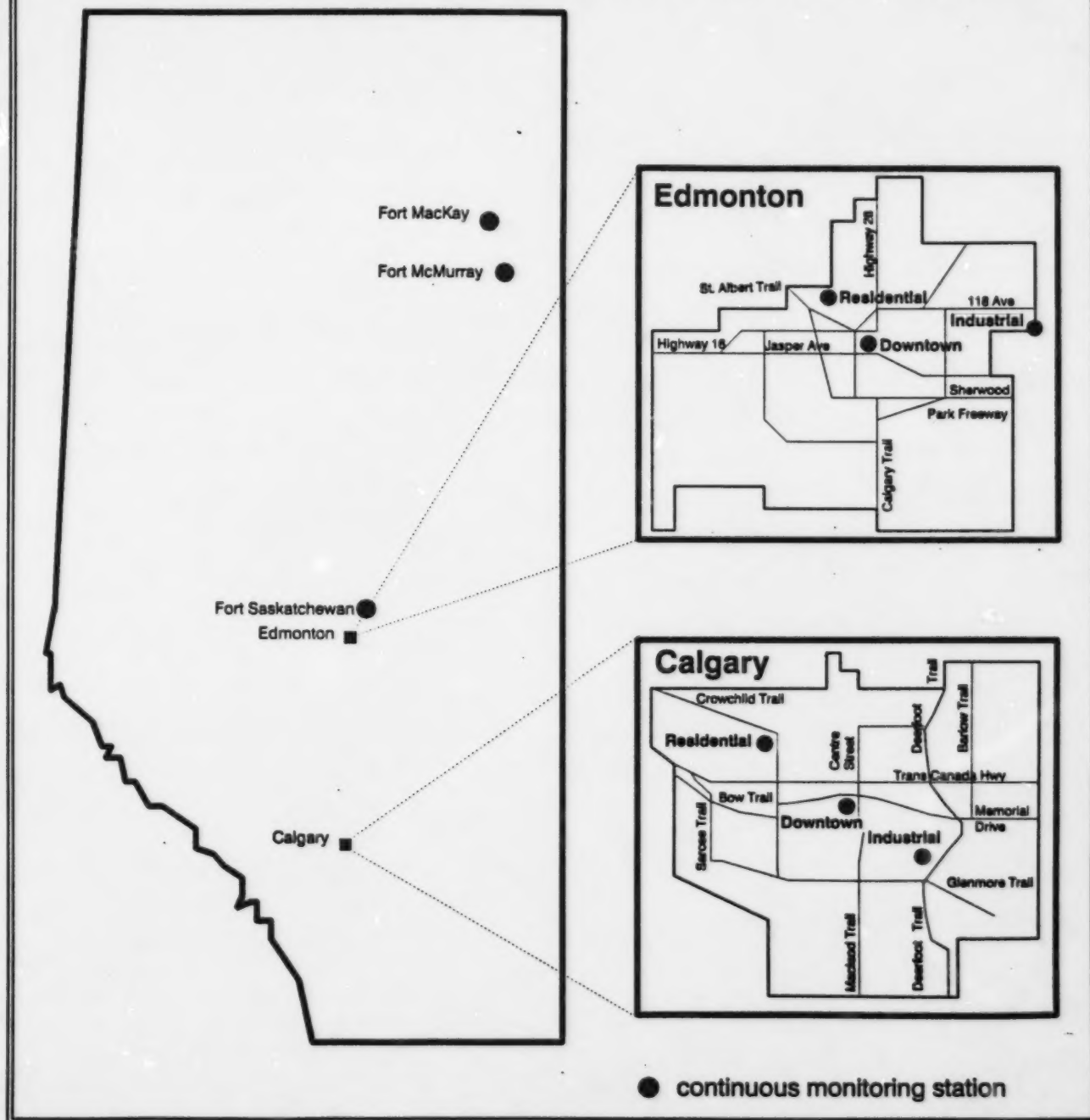
d) *Acid Precipitation Monitoring*

Rain and snow samples were monitored, as an accumulation over a one-month period, at 13 locations in the province by Alberta Environment in 1990. Chemical analysis was conducted these samples to obtain pH as well as other compounds contained in precipitation. Anion and cation concentrations in precipitation samples are presented as a monthly wet deposition (kilograms per hectare) at each acid precipitation monitoring station. Deposition is calculated using the following equation:

$$\text{wet deposition(kg/ha)} = \frac{\text{concentration(mg/l)} \times \text{precipitation(mm)}}{100}$$

Additional precipitation properties are presented by month for each station.

LOCATION OF CONTINUOUS AIR QUALITY MONITORING STATIONS



Alberta

ENVIRONMENT
Environmental Assessment Division
Environmental Quality Monitoring Branch

Location of Continuous Monitoring Stations

Station Name	Station Location
Edmonton Downtown Monitoring Unit (EDMU)	10255 - 104 St.
Edmonton Residential Monitoring Unit (ERMU)	13335 - 127 St.
Edmonton Industrial Monitoring Unit (EIMU)	105 Ave. and 17 St.
Calgary Downtown Monitoring Unit (CDMU)	611 - 4 St. S.W.
Calgary Residential Monitoring Unit (CRMU)	39 St. and 29 Ave. N.W.
Calgary Industrial Monitoring Unit (CIMU)	49 Ave. and 15 St. S.E.
Fort Saskatchewan Monitoring Unit (EMMU)	100 Ave. and 98 St.
Fort McMurray Monitoring Unit (FMMU)	Franklin Ave. at old waterpump house site
Fort MacKay Monitoring Unit (FRMU)	100 m west of the Fort MacKay Band Council Administration Office

INDEX OF THE QUALITY OF THE AIR
EDMONTON DOWNTOWN 1990
(% OF TIME IN EACH CATEGORY)

IQA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
GOOD	94.6	94.6	88.0	99.9	99.5	100.0	96.8	98.7	95.0	91.4	88.3	99.7	95.52
FAIR	5.4	5.4	12.0	0.1	0.5	0.0	3.2	1.3	5.0	7.9	11.7	0.3	4.40
POOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.06
VERY POOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
POLLUTANT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
CO	28.5	8.3	0.0	2.9	0.1	2.4	0.9	3.5	1.8	6.7	8.8	1.7	5.47
COH	16.1	16.7	2.0	2.9	5.4	11.3	28.8	29.7	56.4	46.1	51.5	16.3	23.60
NO _x	50.3	69.5	86.4	62.6	43.3	34.4	22.3	35.5	19.4	40.5	35.8	77.4	48.12
O ₃	5.1	5.5	11.6	31.5	51.2	51.9	48.0	31.3	22.4	6.7	3.9	4.6	22.81

INDEX OF THE QUALITY OF THE AIR
EDMONTON RESIDENTIAL 1990
(% OF TIME IN EACH CATEGORY)

IQA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
GOOD	92.2	89.9	80.4	98.2	91.5	98.6	91.3	95.6	98.3	86.2	84.4	91.5	91.50
FAIR	7.8	9.2	16.5	1.8	8.3	1.4	8.6	4.4	1.7	13.6	15.0	8.5	8.07
POOR	0.0	0.9	3.1	0.0	0.1	0.0	0.1	0.0	0.0	0.3	0.6	0.0	0.43
VERY POOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
POLLUTANT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
CO	2.0	1.5	1.1	0.6	1.2	0.0	1.2	1.2	2.9	1.9	0.6	1.3	1.29
COH	38.2	29.9	43.5	23.6	14.1	9.9	19.4	41.8	50.7	64.9	61.0	26.2	35.27
NO _x	43.8	48.2	19.8	15.6	16.7	20.6	15.9	11.4	13.8	19.9	24.2	57.5	25.62
O ₃	16.0	20.4	35.6	60.3	68.0	69.6	63.6	45.6	32.6	13.3	14.3	14.9	37.85

INDEX OF THE QUALITY OF THE AIR
EDMONTON INDUSTRIAL 1990
(% OF TIME IN EACH CATEGORY)

IQA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
GOOD	92.9	91.7	92.6	98.5	94.2	98.2	89.0	90.6	83.1	90.2	89.3	91.1	91.78
FAIR	7.0	8.2	7.4	1.5	2.7	1.8	10.9	9.3	16.7	9.7	10.7	8.9	7.90
POOR	0.1	0.1	0.0	0.0	2.7	0.0	0.1	0.1	0.3	0.1	0.0	0.0	0.29
VERY POOR	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.03
POLLUTANT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
CO	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.03
COH	54.2	44.6	34.7	17.2	27.7	29.4	30.0	46.9	59.9	50.4	53.3	34.0	40.19
NO _x	15.9	14.7	19.1	14.6	2.9	3.1	4.4	0.7	3.8	21.0	19.3	41.9	13.45
O ₃	29.6	40.6	46.2	68.2	69.3	67.5	65.6	52.4	36.4	28.6	27.4	24.1	46.33
SO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

* NO DATA

INDEX OF THE QUALITY OF THE AIR
CALGARY DOWNTOWN 1990
(% OF TIME IN EACH CATEGORY)

IQUA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
GOOD	89.9	95.1	97.6	99.4	100.0	100.0	99.1	96.9	96.9	93.1	95.7	89.0	96.06
FAIR	9.8	4.9	2.4	0.6	0.0	0.0	0.9	3.1	3.1	6.6	4.3	10.5	3.85
POOR	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.5	0.09
VERY POOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
POLLUTANT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
CO	6.2	3.6	0.8	1.4	0.0	0.0	0.0	0.4	0.1	0.3	3.5	1.1	1.45
COH	29.2	7.9	8.5	6.0	9.0	7.2	29.0	36.7	26.4	38.3	57.6	9.4	22.10
NO _x	64.0	86.9	86.6	71.1	74.9	60.1	41.1	40.2	63.8	55.9	36.4	87.9	64.08
O ₃	0.7	1.6	4.2	21.5	16.1	32.6	29.8	22.7	9.7	5.5	2.5	1.6	12.38

INDEX OF THE QUALITY OF THE AIR
CALGARY RESIDENTIAL 1990
(% OF TIME IN EACH CATEGORY)

IQUA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
GOOD	96.2	99.9	99.3	96.7	95.2	96.5	95.3	94.5	99.9	99.7	99.9	100.0	97.76
FAIR	3.8	0.0	0.7	3.3	4.8	3.5	4.6	5.0	0.1	0.3	0.1	0.0	2.18
POOR	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.5	0.0	0.0	0.0	0.0	0.06
VERY POOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
POLLUTANT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
CO	6.3	2.1	3.9	0.0	0.0	0.3	0.0	0.0	0.1	1.1	1.7	0.0	1.29
COH	14.0	1.5	2.4	0.3	1.6	0.8	0.4	2.8	4.3	5.4	13.1	1.2	3.98
NO _x	46.6	43.3	24.1	18.2	15.3	10.8	19.1	24.9	36.5	45.0	45.4	44.8	31.17
O ₃	33.1	53.1	69.6	81.5	83.1	88.1	80.5	72.3	59.0	48.5	39.9	54.0	63.56

INDEX OF THE QUALITY OF THE AIR
CALGARY INDUSTRIAL 1990
(% OF TIME IN EACH CATEGORY)

IQUA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
GOOD	70.7	85.3	89.7	96.2	99.7	99.6	98.9	96.9	97.6	86.7	86.0	80.8	90.68
FAIR	26.5	14.7	9.8	3.6	0.3	0.4	1.1	3.1	2.4	11.5	14.0	15.9	8.61
POOR	2.8	0.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0	1.7	0.0	3.4	0.71
VERY POOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
POLLUTANT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
CO	0.8	2.2	1.7	0.0	0.0	0.0	0.0	0.0	0.1	1.0	1.3	0.3	0.62
COH	54.0	31.1	26.6	17.1	10.1	6.3	21.4	48.1	49.2	34.7	51.5	43.3	32.78
NO _x	40.2	50.9	41.4	31.1	42.3	32.6	29.6	16.4	22.2	40.7	38.9	41.8	35.68
O ₃	5.0	15.8	30.2	51.8	47.6	61.1	49.1	35.5	28.5	23.6	8.3	14.7	30.93
SO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

* NO DATA

INDEX OF THE QUALITY OF THE AIR
FORT SASKATCHEWAN 1990
(% OF TIME IN EACH CATEGORY)

IQUA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
GOOD	100.0	99.3	92.1	91.0	84.1	91.2	89.8	91.3	100.0	100.0	100.0	100.0	94.91
FAIR	0.0	0.7	7.9	9.0	15.9	8.3	9.9	8.3	0.0	0.0	0.0	0.0	5.00
POOR	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.4	0.0	0.0	0.0	0.0	0.09
VERY POOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
POLLUTANT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
CO	0.5	0.0	0.0	0.0	0.0	0.1	0.0	1.6	0.4	0.0	1.7	0.8	0.43
COH	12.0	0.1	1.9	2.4	8.5	4.4	5.5	4.3	15.0	16.5	25.1	21.0	9.73
NO _x	33.3	46.9	24.1	7.2	5.6	2.6	6.3	15.3	17.8	22.0	23.3	30.5	19.58
O ₃	54.2	53.0	74.1	90.4	85.9	92.8	88.2	78.8	66.8	61.4	49.9	47.7	70.27
SO ₂	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

INDEX OF THE QUALITY OF THE AIR
FORT MCMURRAY 1990
(% OF TIME IN EACH CATEGORY)

IQUA	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
GOOD	99.7	99.9	78.9	56.7	51.5	88.9	96.1	92.7	99.7	100.0	100.0	99.9	88.65
FAIR	0.3	0.1	21.0	42.1	48.0	11.1	3.9	7.3	0.3	0.0	0.0	0.1	11.17
POOR	0.0	0.0	0.1	1.3	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.18
VERY POOR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
POLLUTANT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG
CO	1.2	1.2	1.6	0.0	0.3	2.2	2.0	4.4	12.8	3.0	0.1	0.8	2.47
COH	42.3	27.5	7.0	0.7	1.3	0.8	8.1	11.0	12.2	10.6	25.1	25.4	14.33
NO _x	23.8	23.5	18.8	5.6	5.9	3.1	8.7	0.0	0.0	12.8	10.6	26.2	11.58
O ₃	31.6	45.7	72.3	93.8	92.1	93.6	81.2	83.3	75.0	71.6	63.3	43.4	70.58
SO ₂	1.1	2.1	0.3	0.0	0.4	0.3	0.0	1.2	0.0	2.0	0.8	4.2	1.03

* NO DATA



Wind Summary for 1990
Edmonton Residential Monitoring Station

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	180	179	179	102	33	17	1	0	0	0	691
NNE	47	72	80	36	9	1	0	0	0	0	245
NE	49	71	64	20	2	1	0	0	0	0	207
ENE	35	84	68	35	2	0	0	0	0	0	224
E	45	97	89	39	4	0	0	0	0	0	274
ESE	44	88	72	69	24	6	0	0	0	0	303
SE	41	147	166	102	77	15	6	0	0	0	554
SSE	72	125	198	118	37	14	0	0	0	0	564
S	87	288	218	63	5	0	0	0	0	0	661
SSW	57	283	88	9	2	0	0	0	0	0	439
SW	100	424	127	8	2	0	0	0	0	0	661
WSW	115	298	161	25	4	1	0	0	0	0	604
W	111	319	235	50	10	0	0	0	0	0	725
WNW	101	264	244	133	60	28	12	3	0	0	845
NW	115	231	147	77	38	16	4	0	0	0	628
NNW	131	170	172	120	53	32	11	1	0	0	690
TOTAL	1330	3140	2308	1006	362	131	34	4	0	0	8315

CALM = 256 hours

MISSING DATA = 189 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	2.1	2.0	2.0	1.2	.4	.2	.0	.0	.0	.0	7.9
NNE	.5	.8	.9	.4	.1	.0	.0	.0	.0	.0	2.8
NE	.6	.8	.7	.2	.0	.0	.0	.0	.0	.0	2.4
ENE	.4	1.0	.8	.4	.0	.0	.0	.0	.0	.0	2.6
E	.5	1.1	1.0	.4	.0	.0	.0	.0	.0	.0	3.1
ESE	.5	1.0	.8	.8	.3	.1	.0	.0	.0	.0	3.5
SE	.5	1.7	1.9	1.2	.9	.2	.1	.0	.0	.0	6.3
SSE	.8	1.4	2.3	1.3	.4	.2	.0	.0	.0	.0	6.4
S	1.0	3.3	2.5	.7	.1	.0	.0	.0	.0	.0	7.5
SSW	.7	3.2	1.0	.1	.0	.0	.0	.0	.0	.0	5.0
SW	1.1	4.8	1.4	.1	.0	.0	.0	.0	.0	.0	7.5
WSW	1.3	3.4	1.8	.3	.0	.0	.0	.0	.0	.0	6.9
W	1.3	3.6	2.7	.6	.1	.0	.0	.0	.0	.0	8.3
WNW	1.2	3.0	2.8	1.5	.7	.3	.1	.0	.0	.0	9.6
NW	1.3	2.6	1.7	.9	.4	.2	.0	.0	.0	.0	7.2
NNW	1.5	1.9	2.0	1.4	.6	.4	.1	.0	.0	.0	7.9
TOTAL	15.2	35.8	26.3	11.5	4.1	1.5	.4	.0	.0	.0	94.9

CALM = 2.92%

MISSING DATA = 2.16%

Wind Summary for 1990
Edmonton Industrial Monitoring Station

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	78	149	179	115	66	25	17	2	1	632	
NNE	88	108	73	42	19	12	2	1	1	346	
NE	69	103	104	38	12	1	0	0	0	327	
ENE	39	66	42	20	2	0	0	0	0	169	
E	57	164	152	46	17	1	1	0	0	438	
ESE	70	102	102	68	33	4	0	0	0	379	
SE	76	124	134	85	43	13	4	0	0	479	
SSE	83	180	169	110	99	53	18	1	0	713	
S	74	249	297	146	94	24	8	2	0	894	
SSW	56	310	460	139	36	7	0	0	0	1008	
SW	43	149	161	52	13	2	0	0	0	420	
WSW	39	68	67	48	16	7	2	0	0	247	
W	45	86	90	73	21	10	3	0	2	330	
WNW	65	214	264	143	72	31	11	6	0	806	
NW	65	156	130	105	61	30	15	4	0	566	
NNW	59	143	143	155	59	34	26	8	2	629	
TOTAL	1006	2371	2567	1385	663	254	107	24	6	8383	

CALM = 76 hours

MISSING DATA = 301 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	.9	1.7	2.0	1.3	.8	.3	.2	.0	.0	7.2	
NNE	1.0	1.2	.8	.5	.2	.1	.0	.0	.0	3.9	
NE	.8	1.2	1.2	.4	.1	.0	.0	.0	.0	3.7	
ENE	.4	.8	.5	.2	.0	.0	.0	.0	.0	1.9	
E	.7	1.9	1.7	.5	.2	.0	.0	.0	.0	5.0	
ESE	.8	1.2	1.2	.8	.4	.0	.0	.0	.0	4.3	
SE	.9	1.4	1.5	1.0	.5	.1	.0	.0	.0	5.5	
SSE	.9	2.1	1.9	1.3	1.1	.6	.2	.0	.0	8.1	
S	.8	2.8	3.4	1.7	1.1	.3	.1	.0	.0	10.2	
SSW	.6	3.5	5.3	1.6	.4	.1	.0	.0	.0	11.5	
SW	.5	1.7	1.8	.6	.1	.0	.0	.0	.0	4.8	
WSW	.4	.8	.8	.5	.2	.1	.0	.0	.0	2.8	
W	.5	1.0	1.0	.8	.2	.1	.0	.0	.0	3.8	
WNW	.7	2.4	3.0	1.6	.8	.4	.1	.1	.0	9.2	
NW	.7	1.8	1.5	1.2	.7	.3	.2	.0	.0	6.5	
NNW	.7	1.6	1.6	1.8	.7	.4	.3	.1	.0	7.2	
TOTAL	11.5	27.1	29.3	15.8	7.6	2.9	1.2	.3	.1	95.7	

CALM = .87%

MISSING DATA = 3.44%

Wind Summary for 1990
Calgary Residential Monitoring Station

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	92	140	107	23	12	5	1	0	0	380
NNE	100	81	51	11	0	0	0	0	0	243
NE	97	89	14	2	0	0	0	0	0	202
ENE	80	132	10	0	0	0	0	0	0	222
E	124	150	29	3	0	0	0	0	0	306
ESE	139	203	96	8	0	0	0	0	0	446
SE	156	308	216	51	11	1	0	0	0	743
SSE	108	166	79	25	3	0	0	0	0	381
S	83	50	27	12	5	7	0	0	0	184
SSW	61	31	17	8	9	4	1	0	1	132
SW	85	62	26	22	12	14	12	12	1	246
WSW	126	128	153	114	41	25	10	0	0	597
W	328	870	433	116	36	18	6	0	0	1807
WNW	361	994	284	35	7	3	0	0	0	1684
NW	156	161	162	85	41	12	0	0	0	617
NNW	88	106	134	62	11	13	5	0	0	419
TOTAL	2184	3671	1838	577	188	102	35	12	2	8609

CALM = 7 hours

MISSING DATA = 144 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	1.1	1.6	1.2	.3	.1	.1	.0	.0	.0	4.3
NNE	1.1	.9	.6	.1	.0	.0	.0	.0	.0	2.8
NE	1.1	1.0	.2	.0	.0	.0	.0	.0	.0	2.3
ENE	.9	1.5	.1	.0	.0	.0	.0	.0	.0	2.5
E	1.4	1.7	.3	.0	.0	.0	.0	.0	.0	3.5
ESE	1.6	2.3	1.1	.1	.0	.0	.0	.0	.0	5.1
SE	1.8	3.5	2.5	.6	.1	.0	.0	.0	.0	8.5
SSE	1.2	1.9	.9	.3	.0	.0	.0	.0	.0	4.3
S	.9	.6	.3	.1	.1	.1	.0	.0	.0	2.1
SSW	.7	.4	.2	.1	.1	.0	.0	.0	.0	1.5
SW	1.0	.7	.3	.3	.1	.2	.1	.1	.0	2.8
WSW	1.4	1.5	1.7	1.3	.5	.3	.1	.0	.0	6.8
W	3.7	9.9	4.9	1.3	.4	.2	.1	.0	.0	20.6
WNW	4.1	11.3	3.2	.4	.1	.0	.0	.0	.0	19.2
NW	1.8	1.8	1.8	1.0	.5	.1	.0	.0	.0	7.0
NNW	1.0	1.2	1.5	.7	.1	.1	.1	.0	.0	4.8
TOTAL	24.9	41.9	21.0	6.6	2.1	1.2	.4	.1	.0	98.3

CALM = .08%

MISSING DATA = 1.64%

Wind Summary for 1990
Calgary Industrial Monitoring Station

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	53	141	219	166	59	16	13	2	0	669
NNE	47	134	134	52	5	2	0	0	0	374
NE	53	83	62	8	1	0	0	0	0	207
ENE	56	93	36	7	0	0	0	0	0	192
E	116	127	61	7	1	0	0	0	0	312
ESE	139	87	50	10	2	0	0	0	0	288
SE	203	141	71	21	1	0	0	0	0	437
SSE	215	253	230	104	30	9	0	0	0	841
S	325	284	128	56	9	1	1	0	0	804
SSW	323	131	35	13	11	4	1	0	0	518
SW	225	80	34	24	15	5	0	1	1	385
WSW	252	61	38	26	14	7	6	1	0	405
W	450	226	86	53	32	19	2	0	1	869
WNW	307	355	165	136	57	21	4	0	0	1045
NW	108	214	207	85	13	1	0	0	0	628
NNW	66	144	204	157	62	48	15	1	0	697
TOTAL	2938	2554	1760	925	312	133	42	5	2	8671

CALM = 28 hours

MISSING DATA = 61 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	.6	1.6	2.5	1.9	.7	.2	.1	.0	.0	7.6
NNE	.5	1.5	1.5	.6	.1	.0	.0	.0	.0	4.3
NE	.6	.9	.7	.1	.0	.0	.0	.0	.0	2.4
ENE	.6	1.1	.4	.1	.0	.0	.0	.0	.0	2.2
E	1.3	1.4	.7	.1	.0	.0	.0	.0	.0	3.6
ESE	1.6	1.0	.6	.1	.0	.0	.0	.0	.0	3.3
SE	2.3	1.6	.8	.2	.0	.0	.0	.0	.0	5.0
SSE	2.5	2.9	2.6	1.2	.3	.1	.0	.0	.0	9.6
S	3.7	3.2	1.5	.6	.1	.0	.0	.0	.0	9.2
SSW	3.7	1.5	.4	.1	.1	.0	.0	.0	.0	5.9
SW	2.6	.9	.4	.3	.2	.1	.0	.0	.0	4.4
WSW	2.9	.7	.4	.3	.2	.1	.1	.0	.0	4.6
W	5.1	2.6	1.0	.6	.4	.2	.0	.0	.0	9.9
WNW	3.5	4.1	1.9	1.6	.7	.2	.0	.0	.0	11.9
NW	1.2	2.4	2.4	1.0	.1	.0	.0	.0	.0	7.2
NNW	.8	1.6	2.3	1.8	.7	.3	.2	.0	.0	8.0
TOTAL	33.5	29.2	20.1	10.6	3.6	1.5	.5	.1	.0	99.0

CALM = .32%

MISSING DATA = .70%

Wind Summary for 1990
Fort Saskatchewan Monitoring Station

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	164	114	71	34	4	3	0	0	0	390
NNE	177	52	13	1	0	0	0	0	0	243
NE	119	78	26	1	0	0	0	0	0	224
ENE	79	96	63	10	2	2	1	2	0	255
E	107	113	53	11	1	0	3	1	0	289
ESE	108	137	73	41	14	6	2	0	0	381
SE	107	114	91	56	43	12	2	0	0	425
SSE	163	104	65	49	22	20	2	0	0	425
S	291	235	99	30	21	3	5	0	0	684
SSW	369	265	134	36	10	0	0	0	0	814
SW	276	267	141	48	7	1	1	0	0	741
WSW	129	190	88	39	12	6	0	0	0	464
W	80	175	147	70	18	6	0	0	0	496
WNW	71	120	146	138	68	38	16	11	7	615
NW	94	114	167	121	66	38	29	11	6	646
NNW	107	148	105	94	48	19	12	8	1	542
TOTAL	2441	2322	1482	779	336	154	73	33	14	7634

CALM = 404 hours

MISSING DATA = 722 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	1.9	1.3	.8	.4	.0	.0	.0	.0	.0	4.5
NNE	2.0	.6	.1	.0	.0	.0	.0	.0	.0	2.8
NE	1.4	.9	.3	.0	.0	.0	.0	.0	.0	2.6
ENE	.9	1.1	.7	.1	.0	.0	.0	.0	.0	2.9
E	1.2	1.3	.6	.1	.0	.0	.0	.0	.0	3.3
ESE	1.2	1.6	.8	.5	.2	.1	.0	.0	.0	4.3
SE	1.2	1.3	1.0	.6	.5	.1	.0	.0	.0	4.9
SSE	1.9	1.2	.7	.6	.3	.2	.0	.0	.0	4.9
S	3.3	2.7	1.1	.3	.2	.0	.1	.0	.0	7.8
SSW	4.2	3.0	1.5	.4	.1	.0	.0	.0	.0	9.3
SW	3.2	3.0	1.6	.5	.1	.0	.0	.0	.0	8.5
WSW	1.5	2.2	1.0	.4	.1	.1	.0	.0	.0	5.3
W	.9	2.0	1.7	.8	.2	.1	.0	.0	.0	5.7
WNW	.8	1.4	1.7	1.6	.8	.4	.2	.1	.1	7.0
NW	1.1	1.3	1.9	1.4	.8	.4	.3	.1	.1	7.4
NNW	1.2	1.7	1.2	1.1	.5	.2	.1	.1	.0	6.2
TOTAL	27.9	26.5	16.9	8.9	3.8	1.8	.8	.4	.2	87.1

CALM = 4.61%

MISSING DATA = 8.24%

Wind Summary for 1990
Fort McMurray Monitoring Station

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	211	219	166	48	26	8	1	0	0	679
NNE	235	278	336	170	58	16	1	0	0	1094
NE	89	58	30	1	0	0	0	0	0	178
ENE	70	42	7	1	0	0	0	0	0	120
E	119	30	7	3	0	0	0	0	0	159
ESE	87	20	5	0	0	0	0	0	0	112
SE	219	82	40	3	0	0	0	0	0	344
SSE	557	335	86	5	0	0	0	0	0	983
S	521	144	46	9	0	0	0	0	0	720
SSW	95	20	6	0	0	0	0	0	0	121
SW	56	14	0	0	0	0	0	0	0	70
WSW	124	140	41	2	0	0	0	0	0	307
W	233	137	109	47	6	0	0	0	0	532
WNW	115	62	72	55	27	35	3	2	0	371
NW	109	58	71	52	35	21	9	0	0	355
NNW	113	110	50	36	15	4	0	0	0	328
TOTAL	2953	1749	1072	432	167	84	14	2	0	6473

CALM = 1967 hours

MISSING DATA = 320 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	2.4	2.5	1.9	.5	.3	.1	.0	.0	.0	7.8
NNE	2.7	3.2	3.8	1.9	.7	.2	.0	.0	.0	12.5
NE	1.0	.7	.3	.0	.0	.0	.0	.0	.0	2.0
ENE	.8	.5	.1	.0	.0	.0	.0	.0	.0	1.4
E	1.4	.3	.1	.0	.0	.0	.0	.0	.0	1.8
ESE	1.0	.2	.1	.0	.0	.0	.0	.0	.0	1.3
SE	2.5	.9	.5	.0	.0	.0	.0	.0	.0	3.9
SSE	6.4	3.8	1.0	.1	.0	.0	.0	.0	.0	11.2
S	5.9	1.6	.5	.1	.0	.0	.0	.0	.0	8.2
SSW	1.1	.2	.1	.0	.0	.0	.0	.0	.0	1.4
SW	.6	.2	.0	.0	.0	.0	.0	.0	.0	.8
WSW	1.4	1.6	.5	.0	.0	.0	.0	.0	.0	3.5
W	2.7	1.6	1.2	.5	.1	.0	.0	.0	.0	6.1
WNW	1.3	.7	.8	.6	.3	.4	.0	.0	.0	4.2
NW	1.2	.7	.8	.6	.4	.2	.1	.0	.0	4.1
NNW	1.3	1.3	.6	.4	.2	.0	.0	.0	.0	3.7
TOTAL	33.7	20.0	12.2	4.9	1.9	1.0	.2	.0	.0	73.9

CALM = 22.45%

MISSING DATA = 3.65%

Wind Summary for 1990
Fort MacKay Monitoring Station

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	386	336	365	134	4	0	0	0	0	1225
NNE	247	294	334	23	0	0	0	0	0	898
NE	177	129	77	2	0	0	0	0	0	385
ENE	94	63	15	2	0	0	0	0	0	174
E	69	37	22	3	0	0	0	0	0	131
ESE	72	27	13	2	0	0	0	0	0	114
SE	60	68	21	6	0	0	0	0	0	155
SSE	92	164	144	56	8	0	0	0	0	464
S	239	351	113	6	0	0	0	0	0	709
SSW	494	580	208	14	0	0	0	0	0	1296
SW	257	175	116	38	3	0	0	0	0	589
WSW	158	120	97	29	0	0	0	0	0	404
W	173	108	45	4	0	0	0	0	0	330
WNW	196	104	39	0	0	0	0	0	0	339
NW	207	123	81	13	0	0	0	0	0	424
NNW	300	201	83	23	0	0	0	0	0	607
TOTAL	3221	2880	1773	355	15	0	0	0	0	8244

CALM = 284 hours

MISSING DATA = 232 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	4.4	3.8	4.2	1.5	.0	.0	.0	.0	.0	14.0
NNE	2.8	3.4	3.8	.3	.0	.0	.0	.0	.0	10.3
NE	2.0	1.5	.9	.0	.0	.0	.0	.0	.0	4.4
ENE	1.1	.7	.2	.0	.0	.0	.0	.0	.0	2.0
E	.8	.4	.3	.0	.0	.0	.0	.0	.0	1.5
ESE	.8	.3	.1	.0	.0	.0	.0	.0	.0	1.3
SE	.7	.8	.2	.1	.0	.0	.0	.0	.0	1.8
SSE	1.1	1.9	1.6	.6	.1	.0	.0	.0	.0	5.3
S	2.7	4.0	1.3	.1	.0	.0	.0	.0	.0	8.1
SSW	5.6	6.6	2.4	.2	.0	.0	.0	.0	.0	14.8
SW	2.9	2.0	1.3	.4	.0	.0	.0	.0	.0	6.7
WSW	1.8	1.4	1.1	.3	.0	.0	.0	.0	.0	4.6
W	2.0	1.2	.5	.0	.0	.0	.0	.0	.0	3.8
WNW	2.2	1.2	.4	.0	.0	.0	.0	.0	.0	3.9
NW	2.4	1.4	.9	.1	.0	.0	.0	.0	.0	4.8
NNW	3.4	2.3	.9	.3	.0	.0	.0	.0	.0	6.9
TOTAL	36.8	32.9	20.2	4.1	.2	.0	.0	.0	.0	94.1

CALM = 3.24%

MISSING DATA = 2.65%



NH3 Summary Statistics for 1990
Fort Saskatchewan Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = 2.0 PPM											
-----BY SEASON-----											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	1.2
Spring	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.6
Summer	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	1.3
Autumn	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.7

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances 1 hour					
Winter	.01	.00	.04	1.2	2158	0(0.00%)					
Spring	.01	.00	.03	.6	2186	0(0.00%)					
Summer	.01	.00	.04	1.3	2134	0(0.00%)					
Autumn	.01	.00	.03	.7	2119	0(0.00%)					
-----BY MONTH-----											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	1.2
Feb	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.2
Mar	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.6
Apr	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.3
May	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.3
Jun	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1	.3
Jul	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	1.3
Aug	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.3
Sep	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.1
Oct	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.4
Nov	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	.7
Dec	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.6

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances 1 hour					
Jan	.01	.00	.05	1.2	742	0(0.00%)					
Feb	.01	.00	.03	.2	672	0(0.00%)					
Mar	.01	.00	.04	.6	730	0(0.00%)					
Apr	.01	.00	.03	.3	716	0(0.00%)					
May	.01	.00	.03	.3	740	0(0.00%)					
Jun	.01	.00	.03	.3	655	0(0.00%)					
Jul	.01	.00	.06	1.3	744	0(0.00%)					
Aug	.00	.00	.02	.3	735	0(0.00%)					
Sep	.00	.00	.01	.1	691	0(0.00%)					
Oct	.00	.00	.03	.4	741	0(0.00%)					
Nov	.01	.00	.05	.7	687	0(0.00%)					
Dec	.00	.00	.03	.6	744	0(0.00%)					
-----BY YEAR-----											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	1.3

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances 1 hour					
1990	.01	.00	.04	1.3	8597	0(0.00%)					

n/a - not applicable

* - no data

Annual Average Concentration	
Year: 1990	
Pollutant: NH3 [ppm]	
Year	Fort Saskatchewan
1976	*
1977	*
1978	*
1979	*
1980	*
1981	0.00
1982	0.00
1983	0.00
1984	0.03
1985	0.01
1986	0.03
1987	0.01
1988	0.02
1989	0.00a
1990	0.01

a > 50% to < 75% of data available

b less than 50% of data available

* no data available

CO Summary Statistics for 1990
Edmonton Downtown Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = 13.0 PPM

Ambient 8-hour average regulation = 5.0 PPM

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.2	.3	.5	.6	.9	1.5	2.2	3.5	4.3	6.8	11.3
Spring	.0	.3	.4	.5	.7	1.1	1.5	2.1	2.7	4.0	8.1
Summer	.2	.3	.4	.5	.7	1.0	1.4	1.7	2.0	2.6	5.0
Autumn	.3	.3	.4	.5	.8	1.3	1.9	2.7	3.6	6.5	12.6

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
Winter	1.83	1.47	1.33	11.1	2075	0(0.00%)	4(1.56%)
Spring	1.24	.95	.80	8.1	2143	0(0.00%)	0(0.00%)
Summer	1.07	.95	.53	4.8	2201	0(0.00%)	0(0.00%)
Autumn	1.55	1.24	1.22	12.3	2139	0(0.00%)	3(1.14%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.3	.4	.6	.9	1.4	2.0	2.9	4.0	5.1	6.7	9.9
Feb	.3	.4	.5	.6	.8	1.5	2.1	3.3	4.4	7.3	11.3
Mar	.3	.4	.5	.6	.8	1.4	1.9	2.8	3.3	4.8	7.8
Apr	.2	.4	.4	.5	.7	1.0	1.4	1.9	2.3	3.9	8.1
May	.0	.0	.4	.4	.6	.9	1.3	1.8	2.0	2.7	4.6
Jun	.2	.3	.4	.5	.7	1.0	1.3	1.7	2.0	2.6	3.9
Jul	.2	.3	.4	.5	.7	1.0	1.4	1.7	2.0	2.5	4.2
Aug	.3	.3	.4	.5	.7	1.0	1.4	1.9	2.2	2.8	5.0
Sep	.3	.3	.4	.5	.7	1.2	1.6	2.2	2.6	4.3	5.5
Oct	.3	.3	.4	.5	.7	1.3	2.0	2.6	4.0	8.4	12.6
Nov	.3	.3	.4	.5	.9	1.4	2.2	3.0	4.2	6.4	10.1
Dec	.2	.3	.4	.5	.8	1.2	1.8	2.7	3.2	5.2	7.8

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
Jan	2.31	1.93	1.40	9.6	661	0(0.00%)	2(2.47%)
Feb	1.79	1.41	1.44	11.0	670	0(0.00%)	2(2.41%)
Mar	1.54	1.30	.96	7.5	687	0(0.00%)	0(0.00%)
Apr	1.16	1.00	.74	7.9	714	0(0.00%)	0(0.00%)
May	1.03	.68	.57	4.6	742	0(0.00%)	0(0.00%)
Jun	1.05	.93	.52	3.7	718	0(0.00%)	0(0.00%)
Jul	1.04	.92	.51	4.0	744	0(0.00%)	0(0.00%)
Aug	1.13	1.00	.57	4.7	739	0(0.00%)	0(0.00%)
Sep	1.30	1.11	.75	5.2	685	0(0.00%)	0(0.00%)
Oct	1.61	1.23	1.47	12.3	738	0(0.00%)	2(2.20%)
Nov	1.73	1.39	1.27	9.8	716	0(0.00%)	1(1.12%)
Dec	1.45	1.19	.99	7.6	744	0(0.00%)	0(0.00%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.3	.4	.5	.7	1.2	1.7	2.5	3.3	5.6	12.6

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
1990	1.42	1.13	1.06	12.6	8558	0(0.00%)	7(0.66%)

n/a - not applicable

* - no data

CO Summary Statistics for 1990
Edmonton Residential Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = 13.0 PPM											
Ambient 8-hour average regulation = 5.0 PPM											
-----BY SEASON-----											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.2	.3	.4	.5	1.0	1.7	2.8	3.8	6.3	16.1
Spring	.2	.3	.3	.3	.5	.6	1.0	1.7	2.5	6.5	16.2
Summer	.2	.3	.3	.4	.5	.6	.9	1.2	1.5	2.5	7.3
Autumn	.0	.2	.3	.4	.5	.8	1.4	2.5	3.5	6.2	16.8

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour		8 hour			
Winter	1.37	.96	1.34	16.1	2158	2(0.09%)		3(1.12%)			
Spring	.95	.71	1.17	16.0	2201	2(0.09%)		3(1.10%)			
Summer	.75	.67	.48	7.1	2205	0(0.00%)		0(0.00%)			
Autumn	1.21	.83	1.26	16.8	2180	3(0.14%)		1(0.37%)			
-----BY MONTH-----											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.2	.2	.3	.4	.5	.9	1.8	3.1	4.2	6.3	9.4
Feb	.2	.3	.3	.4	.6	1.0	1.7	2.6	3.6	7.6	16.1
Mar	.2	.3	.3	.4	.6	.8	1.4	2.4	4.3	10.0	16.2
Apr	.2	.3	.3	.3	.4	.6	.8	1.4	2.1	4.0	8.0
May	.2	.2	.3	.3	.4	.5	.8	1.3	1.7	3.1	4.6
Jun	.2	.2	.3	.3	.5	.6	.8	1.1	1.3	1.9	3.9
Jul	.2	.3	.3	.4	.5	.6	.8	1.2	1.5	2.2	7.3
Aug	.3	.3	.4	.4	.5	.7	.9	1.4	1.8	2.9	5.3
Sep	.3	.3	.3	.4	.5	.7	1.1	2.2	2.9	4.6	6.4
Oct	.0	.1	.3	.3	.5	.8	1.4	2.5	3.7	6.7	16.8
Nov	.0	.1	.3	.4	.5	.9	1.7	2.8	4.0	6.0	13.3
Dec	.0	.1	.3	.4	.6	1.0	1.6	2.6	3.3	5.4	12.3

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour		8 hour			
Jan	1.42	1.01	1.34	9.2	742	0(0.00%)		1(1.09%)			
Feb	1.41	1.01	1.53	15.9	672	2(0.30%)		2(2.38%)			
Mar	1.34	.94	1.70	16.0	739	2(0.27%)		3(3.30%)			
Apr	.80	.64	.79	7.8	718	0(0.00%)		0(0.00%)			
May	.71	.59	.56	4.4	744	0(0.00%)		0(0.00%)			
Jun	.69	.62	.35	3.7	719	0(0.00%)		0(0.00%)			
Jul	.74	.65	.51	7.1	744	0(0.00%)		0(0.00%)			
Aug	.83	.73	.54	5.0	742	0(0.00%)		0(0.00%)			
Sep	1.04	.83	.86	6.1	720	0(0.00%)		0(0.00%)			
Oct	1.25	.83	1.45	16.8	743	1(0.13%)		1(1.08%)			
Nov	1.35	.83	1.37	13.3	717	2(0.28%)		0(0.00%)			
Dec	1.29	.87	1.13	12.3	744	0(0.00%)		0(0.00%)			
-----BY YEAR-----											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.2	.3	.4	.5	.7	1.2	2.1	3.0	5.7	16.8

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour		8 hour			
1990	1.07	.78	1.14	16.8	8744	7(0.08%)		7(0.64%)			

n/a - not applicable

* - no data

Wind Summary for 1990 -
Edmonton Residential Monitoring Station

** calculation is for exceedances of the 1-hour regulation for CO **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0
ESE	1	0	0	0	0	0	0	0	0	1
SE	0	0	0	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0	0	0	0
SW	0	1	0	0	0	0	0	0	0	1
WSW	0	0	0	0	0	0	0	0	0	0
W	1	1	0	0	0	0	0	0	0	2
WNW	1	0	0	0	0	0	0	0	0	1
NW	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0
TOTAL	3	2	0	0	0	0	0	0	0	5

CALM = 2 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ESE	14.3	.0	.0	.0	.0	.0	.0	.0	.0	14.3
SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	14.3	.0	.0	.0	.0	.0	.0	.0	14.3
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
W	14.3	14.3	.0	.0	.0	.0	.0	.0	.0	28.6
WNW	14.3	.0	.0	.0	.0	.0	.0	.0	.0	14.3
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	42.9	28.6	.0	.0	.0	.0	.0	.0	.0	71.4

CALM = 28.57%

MISSING DATA = .00%

Wind Summary for 1990
Edmonton Residential Monitoring Station

** calculation is for exceedances of the 8-hour regulation for CO **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	3	1	0	0	0	0	0	0	0	4	
NNE	0	0	0	0	0	0	0	0	0	0	
NE	5	1	0	0	0	0	0	0	0	6	
ENE	0	0	0	0	0	0	0	0	0	0	
E	1	0	0	0	0	0	0	0	0	1	
ESE	5	0	0	0	0	0	0	0	0	5	
SE	1	0	0	0	0	0	0	0	0	1	
SSE	0	0	0	0	0	0	0	0	0	0	
S	0	0	0	0	0	0	0	0	0	0	
SSW	0	0	0	0	0	0	0	0	0	0	
SW	1	2	0	0	0	0	0	0	0	3	
WSW	4	2	0	0	0	0	0	0	0	6	
W	4	2	0	0	0	0	0	0	0	6	
WNW	4	0	0	0	0	0	0	0	0	4	
NW	0	3	0	0	0	0	0	0	0	3	
NNW	4	2	0	0	0	0	0	0	0	6	
TOTAL	32	13	0	0	0	0	0	0	0	45	

CALM = 11 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)									
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL
N	5.4	1.8	.0	.0	.0	.0	.0	.0	.0	7.1
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NE	8.9	1.8	.0	.0	.0	.0	.0	.0	.0	10.7
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	1.8	.0	.0	.0	.0	.0	.0	.0	.0	1.8
ESE	8.9	.0	.0	.0	.0	.0	.0	.0	.0	8.9
SE	1.8	.0	.0	.0	.0	.0	.0	.0	.0	1.8
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SW	1.8	3.6	.0	.0	.0	.0	.0	.0	.0	5.4
WSW	7.1	3.6	.0	.0	.0	.0	.0	.0	.0	10.7
W	7.1	3.6	.0	.0	.0	.0	.0	.0	.0	10.7
WNW	7.1	.0	.0	.0	.0	.0	.0	.0	.0	7.1
NW	.0	5.4	.0	.0	.0	.0	.0	.0	.0	5.4
NNW	7.1	3.6	.0	.0	.0	.0	.0	.0	.0	10.7
TOTAL	57.1	23.2	.0	.0	.0	.0	.0	.0	.0	80.4

CALM = 19.64%

MISSING DATA = .00%

CO Summary Statistics for 1990
Edmonton Industrial Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = 13.0 PPM

Ambient 8-hour average regulation = 5.0 PPM

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.2	.3	.3	.3	.5	.7	1.2	1.5	2.3	3.5
Spring	.0	.1	.2	.2	.3	.4	.5	.9	1.2	1.7	3.5
Summer	.0	.2	.3	.3	.3	.4	.5	.7	.9	1.4	2.4
Autumn	.0	.2	.2	.2	.3	.4	.7	1.1	1.5	2.5	4.0

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
Winter	.62	.47	.43	3.5	2138	0(0.00%)	0(0.00%)
Spring	.47	.38	.34	3.5	2161	0(0.00%)	0(0.00%)
Summer	.47	.40	.22	2.4	2199	0(0.00%)	0(0.00%)
Autumn	.58	.47	.45	4.0	2175	0(0.00%)	0(0.00%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.2	.2	.3	.3	.4	.5	.8	1.2	1.5	2.2	3.5
Feb	.2	.2	.3	.3	.3	.5	.7	1.1	1.4	2.4	2.9
Mar	.2	.2	.2	.3	.3	.4	.7	1.0	1.4	1.8	3.5
Apr	.1	.1	.2	.2	.3	.3	.4	.7	1.1	1.7	2.8
May	.0	.0	.2	.2	.3	.3	.4	.7	1.0	1.4	1.8
Jun	.2	.2	.3	.3	.3	.4	.5	.7	.8	1.3	1.8
Jul	.2	.3	.3	.3	.3	.4	.5	.7	.9	1.3	2.4
Aug	.0	.0	.3	.3	.4	.4	.5	.7	.9	1.4	1.7
Sep	.0	.1	.2	.3	.3	.4	.6	.9	1.2	1.8	2.3
Oct	.1	.2	.2	.2	.3	.4	.6	1.1	1.6	2.8	4.0
Nov	.2	.2	.2	.3	.3	.5	.8	1.1	1.5	2.3	2.9
Dec	.0	.0	.2	.3	.3	.5	.7	1.2	1.5	2.1	3.2

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
Jan	.65	.55	.45	3.3	741	0(0.00%)	0(0.00%)
Feb	.60	.52	.41	2.7	668	0(0.00%)	0(0.00%)
Mar	.57	.49	.38	3.3	740	0(0.00%)	0(0.00%)
Apr	.43	.36	.33	2.7	713	0(0.00%)	0(0.00%)
May	.41	.30	.26	1.8	708	0(0.00%)	0(0.00%)
Jun	.45	.41	.21	1.6	720	0(0.00%)	0(0.00%)
Jul	.47	.44	.22	2.2	744	0(0.00%)	0(0.00%)
Aug	.48	.36	.22	1.7	735	0(0.00%)	0(0.00%)
Sep	.52	.43	.34	2.3	715	0(0.00%)	0(0.00%)
Oct	.60	.47	.54	3.9	740	0(0.00%)	0(0.00%)
Nov	.62	.51	.44	2.7	720	0(0.00%)	0(0.00%)
Dec	.61	.37	.44	3.2	729	0(0.00%)	0(0.00%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.2	.2	.3	.3	.4	.6	.9	1.3	2.1	4.0

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
1990	.53	.43	.38	4.0	8673	0(0.00%)	0(0.00%)

n/a - not applicable

* - no data

CO Summary Statistics for 1990
 Calgary Downtown Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = 13.0 PPM

Ambient 8-hour average regulation = 5.0 PPM

---BY SEASON---

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.1	.3	.3	.4	.7	1.2	2.0	3.3	4.9	10.3	18.5
Spring	.2	.3	.3	.4	.6	.9	1.4	2.0	2.5	4.4	9.5
Summer	.2	.2	.3	.3	.5	.8	1.2	1.6	2.0	2.9	6.4
Autumn	.1	.2	.3	.4	.6	1.0	1.6	2.5	3.2	6.0	11.5

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
Winter	1.72	1.21	1.90	18.4	1954	10(0.51X)	8(3.31X)
Spring	1.14	.93	.89	9.3	2130	0(0.00X)	0(0.00X)
Summer	.93	.79	.59	6.2	2187	0(0.00X)	0(0.00X)
Autumn	1.29	.98	1.13	11.4	2119	0(0.00X)	0(0.00X)

---BY MONTH---

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.1	.3	.4	.4	.7	1.3	2.1	3.9	5.7	10.8	18.5
Feb	.1	.3	.4	.5	.7	1.3	2.2	3.2	4.6	10.3	14.0
Mar	.2	.2	.3	.4	.6	1.1	1.6	2.4	3.1	6.6	9.5
Apr	.2	.3	.4	.4	.6	.8	1.3	1.8	2.3	4.1	8.4
May	.2	.3	.3	.4	.6	.9	1.3	1.8	2.2	3.0	4.1
Jun	.2	.2	.3	.4	.6	.8	1.1	1.5	1.8	2.4	2.9
Jul	.2	.2	.3	.4	.5	.8	1.2	1.6	1.9	2.7	4.5
Aug	.2	.2	.3	.3	.5	.8	1.2	1.7	2.2	3.7	6.4
Sep	.1	.2	.2	.3	.5	.9	1.5	2.2	2.8	4.6	10.2
Oct	.1	.2	.3	.3	.6	.9	1.5	2.5	3.5	6.5	11.5
Nov	.2	.3	.4	.4	.7	1.1	1.9	2.7	3.4	5.2	8.8
Dec	.2	.2	.3	.4	.6	1.0	1.8	3.0	3.9	8.8	16.6

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
Jan	1.89	1.30	2.12	18.4	736	4(0.54X)	5(3.49X)
Feb	1.79	1.30	1.77	13.9	481	2(0.42X)	1(1.67X)
Mar	1.34	1.03	1.16	9.3	722	0(0.00X)	0(0.00X)
Apr	1.05	.87	.78	8.2	671	0(0.00X)	0(0.00X)
May	1.04	.89	.59	3.9	737	0(0.00X)	0(0.00X)
Jun	.88	.77	.46	2.7	714	0(0.00X)	0(0.00X)
Jul	.92	.79	.54	4.3	738	0(0.00X)	0(0.00X)
Aug	1.00	.81	.73	6.2	735	0(0.00X)	0(0.00X)
Sep	1.13	.86	.95	10.1	716	0(0.00X)	0(0.00X)
Oct	1.30	.94	1.31	11.4	688	0(0.00X)	0(0.00X)
Nov	1.44	1.14	1.08	8.6	715	0(0.00X)	0(0.00X)
Dec	1.52	1.07	1.74	16.4	737	4(0.54X)	2(2.20X)

---BY YEAR---

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.1	.2	.3	.4	.6	1.0	1.5	2.3	3.1	6.4	18.5

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
1990	1.26	.96	1.24	18.4	8390	10(0.12X)	8(0.77X)

n/a - not applicable

* - no data

CO Summary Statistics for 1990
 Calgary Residential Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = 13.0 PPM

Ambient 8-hour average regulation = 5.0 PPM

---BY SEASON---

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.0	.1	.2	.2	.3	.5	.9	1.7	2.9	6.6	17.5
Spring	.0	.2	.2	.2	.3	.4	.6	.8	1.3	3.6	9.7
Summer	.0	.1	.2	.2	.3	.4	.5	.7	.8	1.3	2.9
Autumn	.0	.1	.2	.2	.3	.4	.7	1.3	1.8	3.7	6.7

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
Winter	.87	.57	1.22	17.5	2148	2(0.09X)	3(1.13X)
Spring	.54	.40	.63	9.7	2200	0(0.00X)	0(0.00X)
Summer	.42	.33	.24	2.9	2201	0(0.00X)	0(0.00X)
Autumn	.64	.45	.67	6.7	2178	0(0.00X)	0(0.00X)

---BY MONTH---

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.1	.2	.2	.2	.3	.6	1.1	2.3	4.1	8.4	13.9
Feb	.0	.1	.2	.3	.3	.5	.8	1.5	2.5	4.3	17.5
Mar	.0	.2	.2	.2	.3	.4	.7	1.3	2.3	5.6	9.7
Apr	.0	.2	.2	.2	.3	.4	.5	.8	.9	1.5	4.7
May	.1	.1	.2	.2	.3	.4	.5	.7	.9	1.6	3.3
Jun	.1	.2	.2	.2	.3	.3	.4	.6	.7	1.0	1.3
Jul	.0	.0	.2	.2	.3	.4	.5	.6	.8	1.2	2.2
Aug	.0	.1	.2	.2	.3	.4	.5	.7	1.0	1.7	2.9
Sep	.1	.2	.2	.2	.3	.4	.6	.9	1.2	1.8	3.7
Oct	.0	.1	.2	.2	.3	.4	.7	1.4	2.2	3.9	6.7
Nov	.0	.1	.2	.2	.3	.5	.8	1.5	2.1	4.6	6.1
Dec	.1	.1	.2	.2	.3	.4	.8	1.3	2.1	3.5	5.5

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
Jan	1.13	.67	1.64	13.8	739	1(0.14X)	3(3.30X)
Feb	.80	.54	1.07	17.5	669	1(0.15X)	0(0.00X)
Mar	.72	.47	.96	9.7	740	0(0.00X)	0(0.00X)
Apr	.45	.36	.33	4.7	718	0(0.00X)	0(0.00X)
May	.44	.38	.31	3.2	742	0(0.00X)	0(0.00X)
Jun	.38	.35	.18	1.2	718	0(0.00X)	0(0.00X)
Jul	.40	.27	.22	2.2	742	0(0.00X)	0(0.00X)
Aug	.47	.39	.30	2.9	741	0(0.00X)	0(0.00X)
Sep	.52	.44	.36	3.6	718	0(0.00X)	0(0.00X)
Oct	.67	.44	.76	6.7	742	0(0.00X)	0(0.00X)
Nov	.73	.49	.77	6.1	718	0(0.00X)	0(0.00X)
Dec	.68	.50	.69	5.4	740	0(0.00X)	0(0.00X)

---BY YEAR---

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.0	.1	.2	.2	.3	.4	.6	1.1	1.7	4.1	17.5

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
1990	.62	.43	.79	17.5	8727	2(0.02X)	3(0.28X)

n/a - not applicable

* - no data

Wind Summary for 1990
Calgary Residential Monitoring Station

** calculation is for exceedances of the 1-hour regulation for CO **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	0	0	0	0	0	0	0	0	0	0
NNE	1	0	0	0	0	0	0	0	0	1
NE	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0	0	0	0
SE	1	0	0	0	0	0	0	0	0	1
SSE	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0
TOTAL	2	0	0	0	0	0	0	0	0	2

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	50.0	.0	.0	.0	.0	.0	.0	.0	.0	50.0
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SE	50.0	.0	.0	.0	.0	.0	.0	.0	.0	50.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	100.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0

CALM = .00%

MISSING DATA = .00%

Wind Summary for 1990 -
Calgary Residential Monitoring Station

** calculation is for exceedances of the 8-hour regulation for CO **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	0	0	0	0	0	0	0	0	0	0	0
NNE	3	0	0	0	0	0	0	0	0	0	3
NE	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0	0
E	3	0	0	0	0	0	0	0	0	0	3
ESE	0	1	0	0	0	0	0	0	0	0	1
SE	0	0	0	0	0	0	0	0	0	0	0
SSE	1	0	0	0	0	0	0	0	0	0	1
S	0	0	0	0	0	0	0	0	0	0	0
SSW	1	0	0	0	0	0	0	0	0	0	1
SW	0	0	0	0	0	0	0	0	0	0	0
WSW	1	0	0	0	0	0	0	0	0	0	1
W	4	4	0	0	0	0	0	0	0	0	8
WNW	3	1	0	0	0	0	0	0	0	0	4
NW	1	0	0	0	0	0	0	0	0	0	1
NNW	1	0	0	0	0	0	0	0	0	0	1
TOTAL	18	6	0	0	0	0	0	0	0	0	24

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	12.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	12.5
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	12.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	12.5
ESE	.0	4.2	.0	.0	.0	.0	.0	.0	.0	.0	4.2
SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSE	4.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.2
S	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSW	4.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.2
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WSW	4.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.2
W	16.7	16.7	.0	.0	.0	.0	.0	.0	.0	.0	33.3
WNW	12.5	4.2	.0	.0	.0	.0	.0	.0	.0	.0	16.7
NW	4.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.2
NNW	4.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	4.2
TOTAL	75.0	25.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0

CALM = .00%

MISSING DATA = .00%

CO Summary Statistics for 1990
 Calgary Industrial Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = 13.0 PPM

Ambient 8-hour average regulation = 5.0 PPM

---BY SEASON---

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.0	.3	.4	.4	.6	.9	1.9	3.3	4.9	8.3	13.0
Spring	.1	.3	.3	.4	.5	.6	.9	1.6	2.3	4.8	9.1
Summer	.2	.3	.4	.4	.5	.6	.8	1.2	1.5	2.2	4.1
Autumn	.0	.3	.3	.4	.5	.7	1.2	2.2	3.1	5.2	12.8

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
Winter	1.54	1.02	1.61	13.0	2148	1(0.05X)	7(2.63X)
Spring	.90	.72	.88	9.0	2187	0(0.00X)	1(0.37X)
Summer	.72	.64	.41	3.9	2201	0(0.00X)	0(0.00X)
Autumn	1.08	.81	1.07	12.8	2150	0(0.00X)	0(0.00X)

---BY MONTH---

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.0	.2	.4	.4	.6	1.0	2.1	4.3	5.5	8.6	11.7
Feb	.2	.3	.4	.5	.6	1.0	1.9	3.3	4.2	6.1	9.4
Mar	.2	.3	.4	.4	.5	.7	1.2	2.4	3.3	7.2	9.1
Apr	.1	.2	.3	.4	.4	.6	.8	1.3	1.7	3.5	7.8
May	.2	.2	.4	.4	.5	.6	.9	1.3	1.6	2.5	3.3
Jun	.2	.2	.3	.3	.4	.6	.8	1.1	1.3	1.9	2.9
Jul	.2	.3	.3	.4	.5	.6	.8	1.2	1.4	2.2	2.9
Aug	.3	.3	.4	.4	.5	.7	.9	1.3	1.8	2.8	4.1
Sep	.3	.3	.3	.4	.5	.7	1.1	1.8	2.5	3.8	5.1
Oct	.0	.3	.3	.3	.5	.7	1.2	2.2	3.2	6.6	12.8
Nov	.2	.2	.3	.4	.5	.8	1.4	2.6	3.6	5.6	8.2
Dec	.0	.3	.3	.4	.5	.7	1.6	3.1	3.9	8.4	13.0

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
Jan	1.76	1.08	1.82	11.7	737	0(0.00X)	5(5.49X)
Feb	1.53	1.13	1.37	9.2	669	0(0.00X)	0(0.00X)
Mar	1.17	.87	1.25	8.9	741	0(0.00X)	1(1.09X)
Apr	.76	.63	.67	7.7	706	0(0.00X)	0(0.00X)
May	.76	.67	.44	3.1	740	0(0.00X)	0(0.00X)
Jun	.65	.58	.33	2.7	717	0(0.00X)	0(0.00X)
Jul	.71	.64	.37	2.7	742	0(0.00X)	0(0.00X)
Aug	.81	.71	.49	3.8	742	0(0.00X)	0(0.00X)
Sep	.95	.78	.71	4.8	718	0(0.00X)	0(0.00X)
Oct	1.09	.77	1.27	12.8	715	0(0.00X)	0(0.00X)
Nov	1.22	.90	1.13	8.0	717	0(0.00X)	0(0.00X)
Dec	1.34	.88	1.56	13.0	742	1(0.13X)	2(2.17X)

---BY YEAR---

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.0	.3	.3	.4	.5	.7	1.1	2.1	3.1	6.1	13.0

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	8 hour
1990	1.06	.79	1.12	13.0	8686	1(0.01X)	8(0.74X)

n/a - not applicable

* - no data

Wind Summary for 1990
Calgary Industrial Monitoring Station

** calculation is for exceedances of the 1-hour regulation for CO **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

	Wind Speed (km/h)									
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL
N	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0	0	0	0
S	1	0	0	0	0	0	0	0	0	1
SSW	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0
TOTAL	1	0	0	0	0	0	0	0	0	1

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
S	100.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0	
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
W	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
TOTAL	100.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0	

CALM = .00%

MISSING DATA = .00%

Wind Summary for 1990

Calgary Industrial Monitoring Station

** calculation is for exceedances of the 8-hour regulation for CO **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0
NE	1	0	0	0	0	0	0	0	0	1
ENE	2	0	0	0	0	0	0	0	0	2
E	5	0	0	0	0	0	0	0	0	5
ESE	5	0	1	0	0	0	0	0	0	6
SE	12	0	0	0	0	0	0	0	0	12
SSE	4	3	0	1	0	0	0	0	0	8
S	13	0	0	0	0	1	0	0	0	14
SSW	9	0	0	0	0	0	0	0	0	9
SW	1	0	0	0	0	0	0	0	0	1
WSW	0	0	0	0	0	0	0	0	0	0
W	3	0	0	0	0	0	0	0	0	3
WNW	3	0	0	0	0	0	0	0	0	3
NW	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0
TOTAL	58	3	1	1	0	1	0	0	0	64

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)									
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NE	1.6	.0	.0	.0	.0	.0	.0	.0	.0	1.6
ENE	3.1	.0	.0	.0	.0	.0	.0	.0	.0	3.1
E	7.8	.0	.0	.0	.0	.0	.0	.0	.0	7.8
ESE	7.8	.0	1.6	.0	.0	.0	.0	.0	.0	9.4
SE	18.8	.0	.0	.0	.0	.0	.0	.0	.0	18.8
SSE	6.3	4.7	.0	1.6	.0	.0	.0	.0	.0	12.5
S	20.3	.0	.0	.0	.0	1.6	.0	.0	.0	21.9
SSW	14.1	.0	.0	.0	.0	.0	.0	.0	.0	14.1
SW	1.6	.0	.0	.0	.0	.0	.0	.0	.0	1.6
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
W	4.7	.0	.0	.0	.0	.0	.0	.0	.0	4.7
WNW	4.7	.0	.0	.0	.0	.0	.0	.0	.0	4.7
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	90.6	4.7	1.6	1.6	.0	1.6	.0	.0	.0	100.0

CALM = .00%

MISSING DATA = .00%

n/a - not applicable * - no data

CO Summary Statistics for 1990
Fort McMurray Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = 13.0 PPM											
Ambient 8-hour average regulation = 5.0 PPM											
--BY SEASON--											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.0	.3	.3	.4	.4	.5	.8	1.2	1.6	2.9	7.5
Spring	.3	.3	.4	.4	.5	.5	.6	.9	1.2	2.0	3.8
Summer	.2	.3	.3	.3	.4	.4	.5	.7	.8	1.1	2.9
Autumn	.2	.2	.3	.3	.3	.4	.6	.9	1.3	2.6	4.3
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	8 hour				
Winter	.71	.59	.54	7.5	2158	0(0.00X)	0(0.00X)				
Spring	.62	.58	.30	3.5	2095	0(0.00X)	0(0.00X)				
Summer	.48	.46	.18	2.7	2199	0(0.00X)	0(0.00X)				
Autumn	.56	.48	.42	4.1	2184	0(0.00X)	0(0.00X)				
--BY MONTH--											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.3	.3	.4	.4	.4	.6	.9	1.2	1.5	3.0	7.5
Feb	.3	.4	.4	.4	.5	.6	.8	1.1	1.6	3.4	5.0
Mar	.4	.4	.4	.4	.5	.5	.8	1.3	1.6	2.3	3.8
Apr	.4	.4	.4	.5	.5	.5	.6	.7	.9	1.4	2.5
May	.3	.3	.4	.4	.5	.5	.6	.8	.9	1.5	2.0
Jun	.3	.3	.3	.3	.4	.4	.5	.7	.8	1.1	1.8
Jul	.2	.3	.3	.4	.4	.4	.5	.7	.8	1.1	2.9
Aug	.2	.3	.3	.3	.4	.4	.5	.7	.8	1.1	1.3
Sep	.3	.3	.3	.4	.4	.5	.6	.8	1.0	1.5	2.6
Oct	.2	.3	.3	.3	.3	.4	.6	.8	1.0	1.7	3.6
Nov	.2	.2	.2	.3	.3	.4	.6	1.2	1.8	3.4	4.3
Dec	.0	.2	.3	.3	.3	.5	.8	1.2	1.5	2.2	3.5
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	8 hour				
Jan	.75	.64	.60	7.2	743	0(0.00X)	0(0.00X)				
Feb	.74	.64	.55	4.7	672	0(0.00X)	0(0.00X)				
Mar	.71	.63	.43	3.4	636	0(0.00X)	0(0.00X)				
Apr	.58	.56	.21	2.1	720	0(0.00X)	0(0.00X)				
May	.57	.55	.21	1.7	739	0(0.00X)	0(0.00X)				
Jun	.48	.46	.18	1.5	713	0(0.00X)	0(0.00X)				
Jul	.49	.47	.18	2.7	744	0(0.00X)	0(0.00X)				
Aug	.47	.45	.18	1.1	742	0(0.00X)	0(0.00X)				
Sep	.55	.51	.25	2.3	720	0(0.00X)	0(0.00X)				
Oct	.51	.46	.31	3.4	744	0(0.00X)	0(0.00X)				
Nov	.61	.46	.61	4.1	720	0(0.00X)	0(0.00X)				
Dec	.63	.50	.44	3.5	743	0(0.00X)	0(0.00X)				
--BY YEAR--											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.0	.3	.3	.3	.4	.5	.6	.9	1.2	2.2	7.5
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	8 hour				
1990	.59	.52	.39	7.5	8636	0(0.00X)	0(0.00X)				

n/a - not applicable

* - no data

Annual Average Concentration									
Year: 1990									
Pollutant: CO [ppm]									
Year	EDMU	ERMU	EIMU	CDMU	CRMU	CIMU	Fort Sask.	Fort McMurray	
1976	1.57	1.86	0.64	2.11	1.25	1.78	*	*	
1977	2.01	1.50	0.36	2.36	1.37	1.60	*	*	
1978	2.05	1.34	0.33	2.77	1.17	1.51	*		
1979	3.28	1.75	0.39	2.88	1.05	1.68	*	0.40a	
1980	2.97	1.78	0.66	2.34	1.08	1.25	*	0.37	
1981	2.18	1.62	1.01	2.33	1.04	1.96	b	0.48	
1982	1.89	1.04	0.91	2.01	0.99	1.37	0.89	0.54	
1983	1.78	1.22	0.85	2.10	1.09	1.33	0.71	b	
1984	1.63	1.15	0.78	1.84	0.93	1.22	0.65	0.32a	
1985	1.51	0.95	0.73	1.68	0.82	1.12	0.58	0.20	
1986	1.55	1.27	0.57	1.90	0.89	1.34	0.79	0.34	
1987	1.67	1.48	0.61	1.69	0.75	1.30	0.98	0.54	
1988	1.50	1.27	0.56	1.68	0.72	1.39	0.74	0.54	
1989	1.65	1.16	0.57	1.48	0.68	1.21	0.44a	0.46	
1990	1.42	1.07	0.54	1.26	0.62	1.06	0.45	0.59	

a ≥ 50% to < 75% of data available

b less than 50% of data available

* no data available



COH Summary Statistics for 1990
Edmonton Downtown Monitoring Station
Units are COH units

Ambient regulation = 90% of values per month < 1.0 COH unit

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.0	.0	.0	.1	.2	.3	.4	.6	.9	1.6
Spring	.0	.0	.0	.0	.0	.1	.2	.4	.5	.8	1.4
Summer	.0	.0	.0	.0	.0	.1	.2	.4	.5	.7	1.6
Autumn	.0	.0	.0	.0	.1	.2	.3	.6	.8	1.3	2.2

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
Winter	.21	.06	.20	1.6	2122	13(0.61%)
Spring	.17	.04	.17	1.4	2208	7(0.32%)
Summer	.16	.03	.16	1.6	2129	4(0.19%)
Autumn	.26	.07	.27	2.2	2154	48(2.23%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.0	.0	.0	.0	.1	.2	.3	.5	.6	.9	1.1
Feb	.0	.0	.0	.0	.1	.2	.3	.4	.6	1.1	1.6
Mar	.0	.0	.0	.1	.1	.2	.3	.5	.6	.9	1.4
Apr	.0	.0	.0	.0	.0	.1	.2	.3	.4	.7	1.3
May	.0	.0	.0	.0	.0	.1	.2	.3	.4	.6	1.0
Jun	.0	.0	.0	.0	.0	.1	.2	.3	.4	.6	1.0
Jul	.0	.0	.0	.0	.0	.1	.2	.4	.5	.8	1.6
Aug	.0	.0	.0	.0	.0	.1	.2	.4	.4	.7	1.1
Sep	.0	.0	.0	.0	.1	.2	.3	.5	.8	1.1	1.6
Oct	.0	.0	.0	.0	.1	.2	.3	.6	.8	1.5	2.2
Nov	.0	.0	.0	.0	.1	.2	.4	.6	.8	1.2	2.0
Dec	.0	.0	.0	.0	.1	.2	.3	.4	.5	.7	1.3

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
Jan	.22	.06	.20	1.1	706	3(0.42%)
Feb	.21	.06	.22	1.6	672	8(1.19%)
Mar	.24	.13	.20	1.4	744	6(0.81%)
Apr	.13	.02	.15	1.3	720	1(0.14%)
May	.13	.02	.14	1.0	744	0(0.00%)
Jun	.14	.03	.13	1.0	720	0(0.00%)
Jul	.18	.04	.18	1.6	668	3(0.45%)
Aug	.16	.02	.16	1.1	741	1(0.13%)
Sep	.25	.07	.25	1.6	720	12(1.67%)
Oct	.26	.05	.30	2.2	714	22(3.08%)
Nov	.27	.09	.27	2.0	720	14(1.94%)
Dec	.20	.07	.18	1.3	744	2(0.27%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.0	.0	.0	.1	.1	.3	.4	.6	1.0	2.2

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
1990	.20	.04	.21	2.2	8613	72(0.84%)

n/a - not applicable

* - no data

COH Summary Statistics for 1990
Edmonton Residential Monitoring Station
Units are COH units

Ambient regulation = 90% of values per month < 1.0 COH unit											
-----BY SEASON-----											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.0	.0	.0	.1	.2	.4	.6	.8	1.3	2.8
Spring	.0	.0	.0	.0	.0	.1	.3	.5	.7	1.4	2.5
Summer	.0	.0	.0	.0	.0	.1	.2	.4	.5	.8	2.1
Autumn	.0	.0	.0	.0	.1	.2	.4	.7	.9	1.6	2.6

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit					
Winter	.27	.05	.29	2.8	2160	45(2.08%)					
Spring	.21	.03	.28	2.5	2207	48(2.17%)					
Summer	.15	.02	.18	2.1	2183	6(0.27%)					
Autumn	.29	.06	.32	2.6	2182	71(3.25%)					
-----BY MONTH-----											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.0	.0	.0	.0	.0	.2	.4	.6	.9	1.2	1.8
Feb	.0	.0	.0	.0	.1	.2	.4	.6	.8	1.8	2.8
Mar	.0	.0	.0	.0	.1	.2	.4	.7	1.0	1.9	2.5
Apr	.0	.0	.0	.0	.0	.1	.2	.4	.6	1.1	1.6
May	.0	.0	.0	.0	.0	.1	.2	.4	.5	.8	1.2
Jun	.0	.0	.0	.0	.0	.1	.2	.3	.4	.6	.7
Jul	.0	.0	.0	.0	.0	.1	.2	.3	.5	1.0	2.1
Aug	.0	.0	.0	.0	.1	.1	.3	.4	.5	.8	1.1
Sep	.0	.0	.0	.0	.0	.1	.3	.5	.7	1.2	1.8
Oct	.0	.0	.0	.0	.1	.2	.4	.7	1.0	1.8	2.6
Nov	.0	.0	.0	.0	.1	.3	.5	.7	.9	1.6	2.6
Dec	.0	.0	.0	.0	.1	.2	.4	.6	.8	1.1	1.8

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit					
Jan	.26	.04	.28	1.8	744	16(2.15%)					
Feb	.28	.05	.34	2.8	672	19(2.83%)					
Mar	.31	.08	.37	2.5	744	34(4.57%)					
Apr	.17	.02	.22	1.6	719	11(1.53%)					
May	.14	.01	.18	1.2	744	3(0.40%)					
Jun	.12	.01	.14	.7	695	0(0.00%)					
Jul	.14	.01	.21	2.1	744	5(0.67%)					
Aug	.19	.05	.17	1.1	744	1(0.13%)					
Sep	.23	.03	.26	1.8	720	12(1.67%)					
Oct	.30	.06	.36	2.6	743	35(4.71%)					
Nov	.33	.10	.34	2.6	719	24(3.34%)					
Dec	.26	.06	.25	1.8	744	10(1.34%)					
-----BY YEAR-----											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.0	.0	.0	.0	.1	.3	.5	.7	1.3	2.8

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit					
1990	.23	.03	.28	2.8	8732	170(1.95%)					

n/a - not applicable

* - no data

Wind Summary for 1990
Edmonton Residential Monitoring Station
** calculation is for values greater than 1.0 COH unit **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	1	0	0	0	0	0	0	0	0	1
NNE	1	0	0	0	0	0	0	0	0	1
NE	4	1	3	0	0	0	0	0	0	8
ENE	0	1	2	1	0	0	0	0	0	4
E	4	0	0	0	0	0	0	0	0	4
ESE	6	0	2	1	0	0	0	0	0	9
SE	2	3	0	1	0	0	0	0	0	6
SSE	3	2	1	0	0	0	0	0	0	6
S	5	6	0	0	0	0	0	0	0	11
SSW	4	4	0	0	0	0	0	0	0	8
SW	7	28	2	0	0	0	0	0	0	37
WSW	8	12	0	0	0	0	0	0	0	20
W	4	7	0	0	0	0	0	0	0	11
WNW	8	1	0	1	0	0	0	0	0	10
NW	5	3	0	0	0	0	0	0	0	8
NNW	2	0	0	0	0	0	0	0	0	2
TOTAL	64	68	10	4	0	0	0	0	0	146

CALM = 19 hours

MISSING DATA = 5 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	.6	.0	.0	.0	.0	.0	.0	.0	.0	.6
NNE	.6	.0	.0	.0	.0	.0	.0	.0	.0	.6
NE	2.4	.6	1.8	.0	.0	.0	.0	.0	.0	4.7
ENE	.0	.6	1.2	.6	.0	.0	.0	.0	.0	2.4
E	2.4	.0	.0	.0	.0	.0	.0	.0	.0	2.4
ESE	3.5	.0	1.2	.6	.0	.0	.0	.0	.0	5.3
SE	1.2	1.8	.0	.6	.0	.0	.0	.0	.0	3.5
SSE	1.8	1.2	.6	.0	.0	.0	.0	.0	.0	3.5
S	2.9	3.5	.0	.0	.0	.0	.0	.0	.0	6.5
SSW	2.4	2.4	.0	.0	.0	.0	.0	.0	.0	4.7
SW	4.1	16.5	1.2	.0	.0	.0	.0	.0	.0	21.8
WSW	4.7	7.1	.0	.0	.0	.0	.0	.0	.0	11.8
W	2.4	4.1	.0	.0	.0	.0	.0	.0	.0	6.5
WNW	4.7	.6	.0	.6	.0	.0	.0	.0	.0	5.9
NW	2.9	1.8	.0	.0	.0	.0	.0	.0	.0	4.7
NNW	1.2	.0	.0	.0	.0	.0	.0	.0	.0	1.2
TOTAL	37.6	40.0	5.9	2.4	.0	.0	.0	.0	.0	85.9

CALM = 11.18%

MISSING DATA = 2.94%

COH Summary Statistics for 1990
Edmonton Industrial Monitoring Station
Units are COH units

Ambient regulation = 90% of values per month < 1.0 COH unit

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.0	.0	.0	.0	.1	.3	.6	.8	1.2	2.4
Spring	.0	.0	.0	.0	.0	.1	.2	.5	.7	1.1	6.1
Summer	.0	.0	.0	.0	.0	.1	.3	.5	.7	1.2	2.2
Autumn	.0	.0	.0	.0	.0	.2	.4	.7	1.0	1.5	2.7

SEASON Arithmetic Geometric Arithmetic Range N Number of Values > 1.0 COH unit

	Mean	Mean	Std Dev			
Winter	.22	.02	.28	2.4	2086	47(2.25%)
Spring	.18	.01	.31	6.1	2169	26(1.20%)
Summer	.19	.02	.25	2.2	2166	36(1.66%)
Autumn	.27	.03	.33	2.7	2112	82(3.88%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.0	.0	.0	.0	.0	.1	.3	.6	.8	1.1	2.4
Feb	.0	.0	.0	.0	.0	.1	.3	.6	.9	1.4	2.1
Mar	.0	.0	.0	.0	.0	.1	.3	.6	.7	1.0	2.0
Apr	.0	.0	.0	.0	.0	.1	.2	.4	.6	.9	1.5
May	.0	.0	.0	.0	.0	.1	.2	.4	.7	1.2	6.1
Jun	.0	.0	.0	.0	.0	.1	.2	.4	.6	.9	1.8
Jul	.0	.0	.0	.0	.0	.1	.3	.5	.7	1.2	1.8
Aug	.0	.0	.0	.0	.0	.1	.3	.5	.7	1.2	2.2
Sep	.0	.0	.0	.0	.1	.2	.4	.8	1.1	1.5	2.5
Oct	.0	.0	.0	.0	.0	.1	.3	.7	1.0	1.5	2.7
Nov	.0	.0	.0	.0	.1	.2	.4	.6	.8	1.3	1.5
Dec	.0	.0	.0	.0	.0	.1	.3	.6	.8	1.2	1.5

SEASON Arithmetic Geometric Arithmetic Range N Number of Values > 1.0 COH unit

	Mean	Mean	Std Dev			
Jan	.22	.02	.28	2.4	744	12(1.61%)
Feb	.24	.02	.30	2.1	670	19(2.84%)
Mar	.22	.02	.26	2.0	739	7(0.95%)
Apr	.14	.01	.21	1.5	720	6(0.83%)
May	.19	.01	.42	6.1	710	13(1.83%)
Jun	.17	.01	.22	1.8	700	4(0.57%)
Jul	.20	.02	.25	1.8	722	16(2.22%)
Aug	.21	.02	.26	2.2	744	16(2.15%)
Sep	.30	.05	.35	2.5	669	35(5.23%)
Oct	.24	.01	.34	2.7	744	29(3.90%)
Nov	.26	.05	.28	1.5	699	18(2.58%)
Dec	.21	.02	.27	1.5	672	16(2.38%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.0	.0	.0	.0	.1	.3	.6	.8	1.3	6.1

SEASON Arithmetic Geometric Arithmetic Range N Number of Values > 1.0 COH unit

	Mean	Mean	Std Dev			
1990	.22	.02	.29	6.1	8533	191(2.24%)

n/a - not applicable

* - no data

Wind Summary for 1990
Edmonton Industrial Monitoring Station

** calculation is for values greater than 1.0 COH unit **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	5	1	1	0	0	0	0	0	0	7	
NNE	1	0	0	0	0	0	0	0	0	1	
NE	5	2	0	0	0	0	0	0	0	7	
ENE	0	2	1	0	0	0	0	0	0	3	
E	2	4	1	0	0	0	0	0	0	7	
ESE	4	3	6	2	0	0	0	0	0	15	
SE	1	1	0	0	0	0	0	0	0	2	
SSE	1	2	0	0	0	0	0	0	0	3	
S	4	5	0	0	0	0	0	0	0	9	
SSW	4	18	31	2	0	0	0	0	0	55	
SW	5	14	14	2	1	0	0	0	0	36	
WSW	3	2	0	0	0	0	0	0	0	5	
W	4	2	0	1	0	0	0	0	0	7	
WNW	5	2	0	1	0	0	0	0	0	8	
NW	5	0	0	0	0	0	0	0	0	5	
NNW	2	0	0	0	1	0	0	0	0	3	
TOTAL	51	58	54	8	2	0	0	0	0	173	

CALM = 2 hours

MISSING DATA = 16 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	2.6	.5	.5	.0	.0	.0	.0	.0	.0	3.7	
NNE	.5	.0	.0	.0	.0	.0	.0	.0	.0	.5	
NE	2.6	1.0	.0	.0	.0	.0	.0	.0	.0	3.7	
ENE	.0	1.0	.5	.0	.0	.0	.0	.0	.0	1.6	
E	1.0	2.1	.5	.0	.0	.0	.0	.0	.0	3.7	
ESE	2.1	1.6	3.1	1.0	.0	.0	.0	.0	.0	7.9	
SE	.5	.5	.0	.0	.0	.0	.0	.0	.0	1.0	
SSE	.5	1.0	.0	.0	.0	.0	.0	.0	.0	1.6	
S	2.1	2.6	.0	.0	.0	.0	.0	.0	.0	4.7	
SSW	2.1	9.4	16.2	1.0	.0	.0	.0	.0	.0	28.8	
SW	2.6	7.3	7.3	1.0	.5	.0	.0	.0	.0	18.8	
WSW	1.6	1.0	.0	.0	.0	.0	.0	.0	.0	2.6	
W	2.1	1.0	.0	.5	.0	.0	.0	.0	.0	3.7	
WNW	2.6	1.0	.0	.5	.0	.0	.0	.0	.0	4.2	
NW	2.6	.0	.0	.0	.0	.0	.0	.0	.0	2.6	
NNW	1.0	.0	.0	.0	.5	.0	.0	.0	.0	1.6	
TOTAL	26.7	30.4	28.3	4.2	1.0	.0	.0	.0	.0	90.6	

CALM = 1.05%

MISSING DATA = 8.38%

COH Summary Statistics for 1990
 Calgary Downtown Monitoring Station
 Units are COH units

Ambient regulation = 90% of values per month < 1.0 COH unit

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.0	.0	.0	.1	.2	.3	.6	.8	1.5	2.6
Spring	.0	.0	.0	.0	.1	.1	.2	.4	.5	.8	1.8
Summer	.0	.0	.0	.0	.1	.2	.3	.4	.5	.8	1.6
Autumn	.0	.0	.0	.0	.1	.2	.4	.6	.8	1.3	2.2

SEASON Arithmetic Geometric Arithmetic Range N Number of Values > 1.0 COH unit

	Mean	Mean	Std Dev			
Winter	.25	.05	.28	2.6	2086	50(2.40%)
Spring	.18	.04	.19	1.8	2193	16(0.73%)
Summer	.19	.06	.17	1.6	2192	5(0.23%)
Autumn	.27	.09	.26	2.2	2180	38(1.74%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.0	.0	.0	.0	.1	.2	.3	.7	1.0	1.6	2.2
Feb	.0	.0	.0	.0	.1	.2	.3	.4	.6	1.2	1.8
Mar	.0	.0	.0	.0	.1	.2	.3	.5	.6	1.3	1.8
Apr	.0	.0	.0	.0	.0	.1	.2	.3	.5	.7	1.4
May	.0	.0	.0	.0	.0	.1	.2	.4	.5	.7	.8
Jun	.0	.0	.0	.0	.0	.1	.2	.3	.5	.6	.8
Jul	.0	.0	.0	.0	.1	.2	.3	.4	.5	.7	.9
Aug	.0	.0	.0	.0	.1	.2	.3	.5	.6	.9	1.6
Sep	.0	.0	.0	.0	.1	.2	.4	.6	.7	1.0	1.4
Oct	.0	.0	.0	.0	.1	.2	.3	.6	.8	1.6	2.2
Nov	.0	.0	.0	.1	.1	.2	.4	.6	.7	1.2	1.8
Dec	.0	.0	.0	.0	.1	.2	.3	.5	.7	1.2	2.6

SEASON Arithmetic Geometric Arithmetic Range N Number of Values > 1.0 COH unit

	Mean	Mean	Std Dev			
Jan	.28	.05	.33	2.2	733	29(3.96%)
Feb	.21	.05	.23	1.8	610	9(1.48%)
Mar	.22	.05	.23	1.8	741	12(1.62%)
Apr	.16	.03	.17	1.4	716	4(0.56%)
May	.16	.04	.16	.8	736	0(0.00%)
Jun	.16	.03	.14	.8	714	0(0.00%)
Jul	.20	.07	.16	.9	740	0(0.00%)
Aug	.23	.09	.20	1.6	738	5(0.68%)
Sep	.26	.08	.23	1.4	719	6(0.83%)
Oct	.26	.05	.31	2.2	743	22(2.96%)
Nov	.29	.15	.24	1.8	718	10(1.39%)
Dec	.24	.07	.28	2.6	743	12(1.62%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.0	.0	.0	.1	.2	.3	.5	.6	1.2	2.6

SEASON Arithmetic Geometric Arithmetic Range N Number of Values > 1.0 COH unit

	Mean	Mean	Std Dev			
1990	.22	.06	.23	2.6	8651	109(1.26%)

n/a - not applicable

* - no data

COH Summary Statistics for 1990
 Calgary Residential Monitoring Station
 Units are COH units

Ambient regulation = 90% of values per month < 1.0 COH unit

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.0	.0	.0	.0	.1	.1	.3	.4	.9	2.1
Spring	.0	.0	.0	.0	.0	.0	.1	.1	.2	.4	.9
Summer	.0	.0	.0	.0	.0	.0	.1	.1	.2	.3	.5
Autumn	.0	.0	.0	.0	.0	.1	.1	.2	.3	.6	1.1

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
Winter	.11	.00	.17	2.1	2125	12(0.56%)
Spring	.04	.00	.09	.9	2208	0(0.00%)
Summer	.05	.00	.07	.5	2208	0(0.00%)
Autumn	.10	.01	.13	1.1	2166	3(0.14%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.0	.0	.0	.0	.0	.0	.2	.4	.6	1.1	1.3
Feb	.0	.0	.0	.0	.0	.0	.1	.2	.3	.6	2.1
Mar	.0	.0	.0	.0	.0	.0	.1	.1	.2	.3	.9
Apr	.0	.0	.0	.0	.0	.0	.0	.1	.1	.2	.4
May	.0	.0	.0	.0	.0	.0	.1	.1	.2	.4	.9
Jun	.0	.0	.0	.0	.0	.0	.0	.1	.1	.2	.4
Jul	.0	.0	.0	.0	.0	.0	.1	.1	.1	.3	.3
Aug	.0	.0	.0	.0	.0	.0	.1	.2	.2	.3	.5
Sep	.0	.0	.0	.0	.0	.0	.1	.2	.2	.4	.7
Oct	.0	.0	.0	.0	.0	.0	.1	.2	.4	.7	1.1
Nov	.0	.0	.0	.0	.0	.1	.2	.3	.4	.6	1.1
Dec	.0	.0	.0	.0	.0	.1	.1	.2	.3	.5	.7

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
Jan	.14	.00	.23	1.3	742	11(1.48%)
Feb	.07	.00	.14	2.1	639	1(0.16%)
Mar	.05	.00	.11	.9	744	0(0.00%)
Apr	.02	.00	.05	.4	720	0(0.00%)
May	.05	.00	.10	.9	744	0(0.00%)
Jun	.03	.00	.05	.4	720	0(0.00%)
Jul	.05	.00	.06	.3	744	0(0.00%)
Aug	.07	.01	.08	.5	744	0(0.00%)
Sep	.08	.00	.09	.7	720	0(0.00%)
Oct	.09	.00	.15	1.1	726	2(0.28%)
Nov	.13	.02	.14	1.1	720	1(0.14%)
Dec	.10	.02	.11	.7	744	0(0.00%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.0	.0	.0	.0	.0	.1	.2	.3	.6	2.1

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
1990	.07	.00	.12	2.1	8707	15(0.17%)

n/a - not applicable

* - no data

Wind Summary for 1990 .
 Calgary Residential Monitoring Station
 ** calculation is for values greater than 1.0 COH unit **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	0	0	0	0	0	0	0	0	0	0
NNE	1	0	0	0	0	0	0	0	0	1
NE	1	0	0	0	0	0	0	0	0	1
ENE	0	0	0	0	0	0	0	0	0	0
E	3	0	0	0	0	0	0	0	0	3
ESE	0	0	0	0	0	0	0	0	0	0
SE	2	0	0	0	0	0	0	0	0	2
SSE	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0
W	1	0	0	0	0	1	0	0	0	2
WNW	2	0	0	0	0	0	0	0	0	2
NW	2	0	0	0	0	0	0	0	0	2
NNW	2	0	0	0	0	0	0	0	0	2
TOTAL	14	0	0	0	0	1	0	0	0	15

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NNE	6.7	.0	.0	.0	.0	.0	.0	.0	.0	6.7	
NE	6.7	.0	.0	.0	.0	.0	.0	.0	.0	6.7	
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
E	20.0	.0	.0	.0	.0	.0	.0	.0	.0	20.0	
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
SE	13.3	.0	.0	.0	.0	.0	.0	.0	.0	13.3	
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
S	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
W	6.7	.0	.0	.0	.0	6.7	.0	.0	.0	13.3	
WNW	13.3	.0	.0	.0	.0	.0	.0	.0	.0	13.3	
NW	13.3	.0	.0	.0	.0	.0	.0	.0	.0	13.3	
NNW	13.3	.0	.0	.0	.0	.0	.0	.0	.0	13.3	
TOTAL	93.3	.0	.0	.0	.0	6.7	.0	.0	.0	100.0	

CALM = .00%

MISSING DATA = .00%

COH Summary Statistics for 1990
 Calgary Industrial Monitoring Station
 Units are COH units

Ambient regulation = 90% of values per month < 1.0 COH unit

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.0	.0	.0	.1	.2	.4	.8	1.1	2.0	3.5
Spring	.0	.0	.0	.0	.0	.1	.2	.4	.6	1.2	3.7
Summer	.0	.0	.0	.0	.1	.1	.2	.4	.5	.8	1.5
Autumn	.0	.0	.0	.0	.1	.2	.4	.6	.9	1.6	4.0

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
Winter	.33	.08	.40	3.5	2153	115(5.34%)
Spring	.17	.02	.25	3.7	2200	33(1.50%)
Summer	.17	.05	.16	1.5	2208	5(0.23%)
Autumn	.28	.07	.33	4.0	2076	62(2.99%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.0	.0	.0	.0	.1	.2	.5	.9	1.3	2.2	3.5
Feb	.0	.0	.0	.0	.1	.2	.4	.7	.9	1.4	2.0
Mar	.0	.0	.0	.0	.1	.1	.3	.5	.8	1.5	3.7
Apr	.0	.0	.0	.0	.0	.1	.2	.4	.5	1.0	2.5
May	.0	.0	.0	.0	.0	.1	.2	.4	.5	.7	.8
Jun	.0	.0	.0	.0	.0	.1	.2	.3	.4	.6	.9
Jul	.0	.0	.0	.0	.1	.1	.2	.4	.4	.7	1.1
Aug	.0	.0	.0	.1	.1	.2	.3	.5	.6	.9	1.5
Sep	.0	.0	.0	.0	.1	.2	.4	.6	.8	1.3	1.9
Oct	.0	.0	.0	.0	.0	.1	.3	.6	.9	1.8	4.0
Nov	.0	.0	.0	.0	.1	.2	.4	.6	1.0	1.6	1.9
Dec	.0	.0	.0	.0	.1	.2	.4	.6	1.0	2.1	2.9

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
Jan	.39	.09	.46	3.5	737	56(7.60%)
Feb	.28	.06	.31	2.0	672	23(3.42%)
Mar	.23	.04	.33	3.7	744	26(3.49%)
Apr	.16	.02	.22	2.5	720	7(0.97%)
May	.13	.01	.15	.8	736	0(0.00%)
Jun	.12	.01	.14	.9	720	0(0.00%)
Jul	.17	.07	.15	1.1	744	1(0.13%)
Aug	.23	.14	.18	1.5	744	4(0.54%)
Sep	.27	.09	.26	1.9	720	14(1.94%)
Oct	.26	.04	.39	4.0	718	23(3.20%)
Nov	.31	.11	.31	1.9	638	25(3.92%)
Dec	.30	.10	.40	2.9	744	36(4.84%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.0	.0	.0	.1	.1	.3	.5	.8	1.5	4.0

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
1990	.24	.05	.30	4.0	8637	215(2.49%)

n/a - not applicable

* - no data

Wind Summary for 1990
Calgary Industrial Monitoring Station
** calculation is for values greater than 1.0 COH unit **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)										TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40		
N	2	1	0	0	0	0	1	0	0	4	
NNE	1	0	1	0	0	0	0	0	0	2	
NE	2	0	0	0	0	0	0	0	0	2	
ENE	4	0	0	0	0	0	0	0	0	4	
E	8	0	0	0	0	0	0	0	0	8	
ESE	9	0	0	0	0	0	0	0	0	9	
SE	20	1	0	0	0	0	0	0	0	21	
SSE	18	1	0	0	0	0	0	0	0	19	
S	24	0	0	0	0	0	0	0	0	24	
SSW	41	5	0	0	0	0	0	0	0	46	
SW	22	4	1	0	0	0	0	0	0	27	
WSW	11	0	0	0	0	0	0	0	0	11	
W	20	0	0	0	0	0	0	0	0	20	
WNW	8	0	0	0	0	0	0	0	0	8	
NW	4	0	0	0	0	0	0	0	0	4	
NNW	1	0	1	0	0	2	1	0	0	5	
TOTAL	195	12	3	0	0	2	2	0	0	214	

CALM = 1 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)									
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL
N	.9	.5	.0	.0	.0	.0	.5	.0	.0	1.9
NNE	.5	.0	.5	.0	.0	.0	.0	.0	.0	.9
NE	.9	.0	.0	.0	.0	.0	.0	.0	.0	.9
ENE	1.9	.0	.0	.0	.0	.0	.0	.0	.0	1.9
E	3.7	.0	.0	.0	.0	.0	.0	.0	.0	3.7
ESE	4.2	.0	.0	.0	.0	.0	.0	.0	.0	4.2
SE	9.3	.5	.0	.0	.0	.0	.0	.0	.0	9.8
SSE	8.4	.5	.0	.0	.0	.0	.0	.0	.0	8.8
S	11.2	.0	.0	.0	.0	.0	.0	.0	.0	11.2
SSW	19.1	2.3	.0	.0	.0	.0	.0	.0	.0	21.4
SW	10.2	1.9	.5	.0	.0	.0	.0	.0	.0	12.6
WSW	5.1	.0	.0	.0	.0	.0	.0	.0	.0	5.1
W	9.3	.0	.0	.0	.0	.0	.0	.0	.0	9.3
WNW	3.7	.0	.0	.0	.0	.0	.0	.0	.0	3.7
NW	1.9	.0	.0	.0	.0	.0	.0	.0	.0	1.9
NNW	.5	.0	.5	.0	.0	.9	.5	.0	.0	2.3
TOTAL	90.7	5.6	1.4	.0	.0	.9	.9	.0	.0	99.5

CALM = .47%

MISSING DATA = .00%

COH Summary Statistics for 1990
Fort Saskatchewan Monitoring Station
Units are COH units

Ambient regulation = 90% of values per month < 1.0 COH unit

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.0	.0	.0	.0	.1	.2	.3	.4	.5	.8
Spring	.0	.0	.0	.0	.0	.0	.1	.2	.2	.4	.6
Summer	.0	.0	.0	.0	.0	.0	.1	.1	.2	.3	.5
Autumn	.0	.0	.0	.0	.0	.1	.1	.3	.4	.6	.9

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
Winter	.11	.01	.13	.8	2127	0(0.00%)
Spring	.06	.00	.09	.6	2203	0(0.00%)
Summer	.05	.00	.07	.5	2168	0(0.00%)
Autumn	.10	.00	.13	.9	2000	0(0.00%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.0	.0	.0	.0	.0	.1	.2	.3	.4	.6	.8
Feb	.0	.0	.0	.0	.0	.0	.1	.2	.3	.4	.6
Mar	.0	.0	.0	.0	.0	.0	.1	.2	.3	.5	.6
Apr	.0	.0	.0	.0	.0	.0	.0	.1	.2	.3	.6
May	.0	.0	.0	.0	.0	.0	.1	.2	.2	.4	.6
Jun	.0	.0	.0	.0	.0	.0	.1	.1	.2	.4	.5
Jul	.0	.0	.0	.0	.0	.0	.1	.1	.2	.3	.4
Aug	.0	.0	.0	.0	.0	.0	.1	.1	.2	.3	.5
Sep	.0	.0	.0	.0	.0	.0	.1	.2	.3	.4	.6
Oct	.0	.0	.0	.0	.0	.0	.1	.3	.4	.6	.9
Nov	.0	.0	.0	.0	.0	.1	.2	.3	.4	.7	.9
Dec	.0	.0	.0	.0	.0	.1	.2	.3	.4	.5	.7

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
Jan	.12	.01	.14	.8	741	0(0.00%)
Feb	.08	.00	.10	.6	672	0(0.00%)
Mar	.07	.00	.11	.6	739	0(0.00%)
Apr	.13	.00	.07	.6	720	0(0.00%)
May	.07	.00	.09	.6	744	0(0.00%)
Jun	.06	.00	.08	.5	680	0(0.00%)
Jul	.05	.00	.07	.4	744	0(0.00%)
Aug	.05	.00	.07	.5	744	0(0.00%)
Sep	.08	.00	.10	.6	634	0(0.00%)
Oct	.10	.00	.14	.9	701	0(0.00%)
Nov	.13	.01	.15	.9	665	0(0.00%)
Dec	.12	.01	.13	.7	714	0(0.00%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.0	.0	.0	.0	.0	.1	.2	.3	.5	.9

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit
1990	.08	.00	.11	.9	8498	0(0.00%)

n/a - not applicable

* - no data

COH Summary Statistics for 1990
Fort McMurray Monitoring Station
Units are COH units

Ambient regulation = 90% of values per month < 1.0 COH unit											
-----BY SEASON-----											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.0	.0	.0	.0	.0	.1	.2	.3	.4	.7	1.3
Spring	.0	.0	.0	.0	.0	.0	.1	.2	.3	.5	1.0
Summer	.0	.0	.0	.0	.0	.0	.1	.2	.2	.4	.8
Autumn	.0	.0	.0	.0	.0	.0	.1	.2	.3	.6	1.0

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit					
Winter	.13	.02	.15	1.3	2078	4(0.19%)					
Spring	.07	.00	.10	1.0	1814	0(0.00%)					
Summer	.06	.00	.09	.8	1954	0(0.00%)					
Autumn	.07	.00	.12	1.0	2082	0(0.00%)					
-----BY MONTH-----											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.0	.0	.0	.0	.0	.1	.2	.3	.4	.6	1.1
Feb	.0	.0	.0	.0	.0	.1	.2	.3	.4	.7	1.1
Mar	.0	.0	.0	.0	.0	.1	.1	.3	.3	.5	.8
Apr	.0	.0	.0	.0	.0	.0	.1	.1	.2	.3	1.0
May	.0	.0	.0	.0	.0	.1	.1	.2	.2	.3	.5
Jun	.0	.0	.0	.0	.0	.0	.1	.1	.2	.3	.8
Jul	.0	.0	.0	.0	.0	.0	.1	.2	.2	.4	.6
Aug	.0	.0	.0	.0	.0	.0	.1	.2	.2	.4	.5
Sep	.0	.0	.0	.0	.0	.0	.1	.1	.2	.4	1.0
Oct	.0	.0	.0	.0	.0	.0	.1	.2	.2	.4	.8
Nov	.0	.0	.0	.0	.0	.0	.1	.3	.4	.7	1.0
Dec	.0	.0	.0	.0	.0	.1	.2	.3	.4	.5	1.3

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit					
Jan	.15	.02	.15	1.1	738	2(0.27%)					
Feb	.14	.01	.17	1.1	620	1(0.16%)					
Mar	.10	.01	.13	.8	616	0(0.00%)					
Apr	.05	.00	.09	1.0	706	0(0.00%)					
May	.07	.01	.08	.5	492	0(0.00%)					
Jun	.05	.00	.07	.8	556	0(0.00%)					
Jul	.07	.00	.09	.6	657	0(0.00%)					
Aug	.06	.00	.09	.5	741	0(0.00%)					
Sep	.06	.00	.09	1.0	701	0(0.00%)					
Oct	.06	.00	.09	.8	661	0(0.00%)					
Nov	.11	.00	.16	1.0	720	0(0.00%)					
Dec	.12	.01	.13	1.3	720	1(0.14%)					
-----BY YEAR-----											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.0	.0	.0	.0	.0	.0	.1	.2	.3	.5	1.3

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Values > 1.0 COH unit					
1990	.09	.00	.12	1.3	7928	4(0.05%)					

n/a - not applicable

* - no data

Wind Summary for 1990
Fort McMurray Monitoring Station

** calculation is for values greater than 1.0 COH unit **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

CALM = 4 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

CALM = 100.0%

MISSING DATA = .00%

Annual Average Concentration								
Year: 1990								
Pollutant: COH [COH units]								
Year	EDMU	ERMU	EIMU	CDMU	CRMU	CIMU	Fort Sask.	Fort McMurray
1976	0.189	0.110	0.043	0.156	0.103	0.205	*	*
1977	0.198	0.117	0.090	0.188	0.112	0.230	*	*
1978	0.198	0.150	0.132	0.242	0.098	0.223	*	*
1979	0.269	0.232	0.201	0.246	0.101	0.255	*	0.04
1980	0.297	0.279	0.227	0.300	0.111	0.285	*	0.08
1981	0.370	0.285	0.220	0.408	0.140	0.330	b	0.10
1982	0.302	0.248	0.088	0.403	0.158	0.334	0.13	0.06
1983	0.253	0.238	0.167	0.329	0.108	0.309	0.12	0.03
1984	0.227	0.221	0.244	0.233	0.118	0.294	0.13	0.03
1985	0.230	0.225	0.218	0.269	0.099	0.227	0.13	0.06
1986	0.259	0.240	0.184	0.298	0.106	0.234	0.13	0.05
1987	0.232	0.269	0.171	0.321	0.110	0.280	0.144	0.072
1988	0.190	0.232	0.209	0.260	0.081	0.295	0.098	0.067
1989	0.208	0.229	0.242	0.247	0.080	0.285	0.096	0.069
1990	0.199	0.229	0.216	0.221	0.073	0.237	0.078	0.086

a ≥ 50% to < 75% of data available

b less than 50% of data available

* no data available

H2S Summary Statistics for 1990
 Calgary Industrial Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .010 PPM											
Ambient 24-hour average regulation = .003 PPM											
-----BY SEASON-----											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.000	.000	.000	.000	.000	.001	.002	.003	.004	.006	.008
Spring	.000	.000	.000	.000	.000	.001	.001	.002	.002	.003	.011
Summer	.000	.000	.000	.000	.000	.000	.001	.001	.002	.003	.003
Autumn	.000	.000	.000	.000	.000	.001	.001	.002	.003	.003	.011
-----BY SEASON-----											
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
Winter	.001	.000	.001	.008	1975	0(0.00%)	1(1.16%)				
Spring	.001	.000	.001	.011	2068	1(0.05%)	1(1.11%)				
Summer	.001	.000	.001	.005	1241	0(0.00%)	0(0.00%)				
Autumn	.001	.000	.001	.011	2056	3(0.15%)	0(0.00%)				
-----BY MONTH-----											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.000	.000	.000	.000	.000	.001	.002	.003	.004	.007	.008
Feb	.000	.000	.000	.000	.000	.001	.002	.003	.004	.006	.007
Mar	.000	.000	.000	.000	.001	.001	.002	.003	.004	.006	.011
Apr	.000	.000	.000	.000	.000	.001	.001	.001	.002	.003	.003
May	.000	.000	.000	.000	.000	.001	.001	.001	.002	.002	.003
Jun	.000	.000	.000	.000	.000	.000	.001	.001	.001	.002	.003
Jul	.000	.000	.000	.000	.000	.000	.001	.002	.002	.003	.003
Aug	.000	.000	.000	.000	.000	.001	.001	.002	.002	.003	.003
Sep	.000	.000	.000	.000	.001	.001	.002	.003	.003	.006	.007
Oct	.000	.000	.000	.000	.000	.001	.001	.002	.003	.003	.011
Nov	.000	.000	.000	.000	.000	.001	.001	.002	.003	.004	.007
Dec	.000	.000	.000	.000	.001	.001	.002	.003	.003	.006	.008
-----BY MONTH-----											
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
Jan	.001	.000	.001	.008	637	0(0.00%)	0(0.00%)				
Feb	.001	.000	.001	.007	627	0(0.00%)	0(0.00%)				
Mar	.001	.000	.001	.011	709	1(0.14%)	1(3.23%)				
Apr	.001	.000	.001	.005	651	0(0.00%)	0(0.00%)				
May	.001	.000	.001	.003	708	0(0.00%)	0(0.00%)				
Jun	.000	.000	.001	.005	626	0(0.00%)	0(0.00%)				
Jul	.001	.000	.001	.003	401	0(0.00%)	0(0.00%)				
Aug	.001	.000	.001	.005	214	0(0.00%)	0(0.00%)				
Sep	.001	.001	.001	.007	688	0(0.00%)	0(0.00%)				
Oct	.001	.000	.001	.011	685	3(0.44%)	0(0.00%)				
Nov	.001	.000	.001	.007	683	0(0.00%)	0(0.00%)				
Dec	.001	.001	.001	.008	711	0(0.00%)	1(3.23%)				
-----BY YEAR-----											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.000	.000	.000	.000	.000	.001	.001	.002	.003	.003	.011
-----BY YEAR-----											
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
1990	.001	.000	.001	.011	7340	4(0.05%)	2(0.63%)				

n/a - not applicable

* - no data

Wind Summary for 1990
Calgary Industrial Monitoring Station

** calculation is for exceedances of the 1-hour regulation for H2S **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0	0	0	0	0
SE	1	0	0	0	0	0	0	0	0	0	1
SSE	0	0	1	0	0	0	0	0	0	0	1
S	0	0	0	0	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0	0
NNW	1	0	0	0	0	0	0	0	0	0	1
TOTAL	2	0	1	0	0	0	0	0	0	0	3

CALM = 1 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SE	25.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	25.0
SSE	.0	.0	25.0	.0	.0	.0	.0	.0	.0	.0	25.0
S	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	25.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	25.0
TOTAL	50.0	.0	25.0	.0	.0	.0	.0	.0	.0	.0	75.0

CALM = 25.00%

MISSING DATA = .00%

Wind Summary for 1990 .
Calgary Industrial Monitoring Station

** calculation is for exceedances of the 24-hour regulation for H2S **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	0	0	0	0	0	0	0	0	0	0	
NNE	0	0	0	0	0	0	0	0	0	0	
NE	0	0	0	0	0	0	0	0	0	0	
ENE	1	0	0	0	0	0	0	0	0	1	
E	1	0	0	0	0	0	0	0	0	1	
ESE	1	0	0	0	0	0	0	0	0	1	
SE	4	0	0	0	0	0	0	0	0	4	
SSE	2	2	2	1	0	2	0	0	0	9	
S	5	0	0	4	2	0	0	0	0	11	
SSW	14	0	0	0	0	0	0	0	0	14	
SW	4	0	0	0	0	0	0	0	0	4	
WSW	1	1	0	0	0	0	0	0	0	2	
W	0	1	0	0	0	0	0	0	0	1	
WNW	0	0	0	0	0	0	0	0	0	0	
NW	0	0	0	0	0	0	0	0	0	0	
NNW	0	0	0	0	0	0	0	0	0	0	
TOTAL	33	4	2	5	2	2	0	0	0	48	

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
ENE	2.1	.0	.0	.0	.0	.0	.0	.0	.0	2.1	
E	2.1	.0	.0	.0	.0	.0	.0	.0	.0	2.1	
ESE	2.1	.0	.0	.0	.0	.0	.0	.0	.0	2.1	
SE	8.3	.0	.0	.0	.0	.0	.0	.0	.0	8.3	
SSE	4.2	4.2	4.2	2.1	.0	4.2	.0	.0	.0	18.8	
S	10.4	.0	.0	8.3	4.2	.0	.0	.0	.0	22.9	
SSW	29.2	.0	.0	.0	.0	.0	.0	.0	.0	29.2	
SW	8.3	.0	.0	.0	.0	.0	.0	.0	.0	8.3	
WSW	2.1	2.1	.0	.0	.0	.0	.0	.0	.0	4.2	
W	.0	2.1	.0	.0	.0	.0	.0	.0	.0	2.1	
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
TOTAL	68.8	8.3	4.2	10.4	4.2	4.2	.0	.0	.0	100.0	

CALM = .00%

MISSING DATA = .00%

H2S Summary Statistics for 1990
Fort Saskatchewan Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .010 PPM											
Ambient 24-hour average regulation = .003 PPM											
-BY SEASON-											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.000	.000	.000	.001	.001	.002	.002	.002	.005
Spring	.000	.000	.000	.000	.000	.000	.001	.001	.002	.002	.003
Summer	.000	.000	.000	.000	.000	.001	.001	.001	.001	.002	.003
Autumn	.000	.000	.000	.000	.001	.001	.002	.002	.003	.003	.004
SEASON Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Winter	.001	.000	.001	.005	1957			0(0.00X)	0(0.00X)		
Spring	.000	.000	.001	.003	2196			0(0.00X)	0(0.00X)		
Summer	.001	.000	.001	.003	2198			0(0.00X)	0(0.00X)		
Autumn	.001	.001	.001	.004	2150			0(0.00X)	0(0.00X)		
-BY MONTH-											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.000	.000	.000	.000	.001	.001	.001	.002	.003
Feb	.000	.000	.000	.000	.000	.001	.001	.001	.001	.002	.005
Mar	.000	.000	.000	.000	.000	.000	.001	.002	.002	.002	.003
Apr	.000	.000	.000	.000	.000	.000	.001	.002	.002	.003	.003
May	.000	.000	.000	.000	.000	.000	.000	.001	.001	.001	.001
Jun	.000	.000	.000	.000	.000	.000	.001	.001	.001	.002	.003
Jul	.000	.000	.000	.000	.000	.000	.001	.001	.001	.002	.002
Aug	.000	.000	.000	.000	.001	.001	.001	.001	.002	.002	.003
Sep	.000	.000	.000	.000	.000	.001	.001	.001	.001	.002	.002
Oct	.000	.000	.001	.001	.001	.001	.001	.002	.002	.002	.003
Nov	.000	.001	.001	.001	.002	.002	.002	.003	.003	.004	.004
Dec	.000	.000	.000	.000	.000	.001	.002	.002	.002	.002	.003
MONTH Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Jan	.001	.000	.001	.003	739			0(0.00X)	0(0.00X)		
Feb	.001	.000	.000	.005	672			0(0.00X)	0(0.00X)		
Mar	.001	.000	.001	.003	736			0(0.00X)	0(0.00X)		
Apr	.001	.000	.001	.003	717			0(0.00X)	0(0.00X)		
May	.000	.000	.000	.001	743			0(0.00X)	0(0.00X)		
Jun	.000	.000	.000	.003	714			0(0.00X)	0(0.00X)		
Jul	.000	.000	.000	.002	743			0(0.00X)	0(0.00X)		
Aug	.001	.000	.001	.003	741			0(0.00X)	0(0.00X)		
Sep	.001	.000	.000	.002	692			0(0.00X)	0(0.00X)		
Oct	.001	.001	.000	.003	738			0(0.00X)	0(0.00X)		
Nov	.002	.002	.001	.004	720			0(0.00X)	0(0.00X)		
Dec	.001	.000	.001	.003	546			0(0.00X)	0(0.00X)		
-BY YEAR-											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.000	.000	.000	.001	.001	.002	.002	.003	.005
YEAR Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
1990	.001	.000	.001	.005	8501			0(0.00X)	0(0.00X)		

n/a - not applicable

* - no data

H2S Summary Statistics for 1990
 Fort McMurray Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .010 PPM											
Ambient 24-hour average regulation = .003 PPM											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.000	.000	.000	.000	.001	.001	.001	.002	.003
Spring	.000	.000	.000	.000	.000	.000	.000	.000	.001	.001	.004
Summer	.000	.000	.000	.000	.000	.000	.000	.001	.001	.002	.006
Autumn	.000	.000	.000	.000	.000	.000	.000	.001	.001	.002	.012
-----BY SEASON-----											
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
Winter	.000	.000	.001	.003	2011	0(0.00X)	0(0.00X)				
Spring	.000	.000	.000	.004	2094	0(0.00X)	0(0.00X)				
Summer	.000	.000	.000	.006	2183	0(0.00X)	0(0.00X)				
Autumn	.000	.000	.000	.012	2147	1(0.05X)	0(0.00X)				
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.000	.000	.000	.001	.001	.001	.001	.001	.003
Feb	.000	.000	.000	.000	.000	.000	.001	.001	.001	.001	.002
Mar	.000	.000	.000	.000	.000	.000	.000	.000	.001	.002	.004
Apr	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.001
May	.000	.000	.000	.000	.000	.000	.000	.000	.001	.001	.001
Jun	.000	.000	.000	.000	.000	.000	.000	.001	.002	.002	.003
Jul	.000	.000	.000	.000	.000	.000	.001	.001	.001	.002	.002
Aug	.000	.000	.000	.000	.000	.000	.000	.001	.001	.003	.006
Sep	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.001
Oct	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002
Nov	.000	.000	.000	.000	.000	.000	.001	.001	.001	.003	.012
Dec	.000	.000	.000	.000	.000	.000	.001	.001	.002	.002	.002
-----BY MONTH-----											
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
Jan	.001	.000	.000	.003	744	0(0.00X)	0(0.00X)				
Feb	.000	.000	.000	.002	528	0(0.00X)	0(0.00X)				
Mar	.000	.000	.000	.004	635	0(0.00X)	0(0.00X)				
Apr	.000	.000	.000	.001	720	0(0.00X)	0(0.00X)				
May	.000	.000	.000	.001	739	0(0.00X)	0(0.00X)				
Jun	.000	.000	.001	.003	712	0(0.00X)	0(0.00X)				
Jul	.000	.000	.000	.002	743	0(0.00X)	0(0.00X)				
Aug	.000	.000	.001	.006	728	0(0.00X)	0(0.00X)				
Sep	.000	.000	.000	.001	683	0(0.00X)	0(0.00X)				
Oct	.000	.000	.000	.002	744	0(0.00X)	0(0.00X)				
Nov	.000	.000	.001	.012	720	1(0.14X)	0(0.00X)				
Dec	.000	.000	.001	.002	739	0(0.00X)	0(0.00X)				
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.000	.000	.000	.000	.000	.001	.001	.002	.012
-----BY YEAR-----											
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
1990	.000	.000	.000	.012	8435	1(0.01X)	0(0.00X)				

n/a - not applicable

* - no data

Wind Summary for 1990
Fort McMurray Monitoring Station

** calculation is for exceedances of the 1-hour regulation for H2S **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	0	0	0	0	0	0	0	0	0	0	
NNE	0	0	0	0	0	0	0	0	0	0	
NE	0	0	0	0	0	0	0	0	0	0	
ENE	0	0	0	0	0	0	0	0	0	0	
E	0	0	0	0	0	0	0	0	0	0	
ESE	0	0	0	0	0	0	0	0	0	0	
SE	0	0	0	0	0	0	0	0	0	0	
SSE	0	0	0	0	0	0	0	0	0	0	
S	0	0	0	0	0	0	0	0	0	0	
SSW	0	0	0	0	0	0	0	0	0	0	
SW	0	0	0	0	0	0	0	0	0	0	
WSW	0	0	0	0	0	0	0	0	0	0	
W	0	0	0	0	0	0	0	0	0	0	
WNW	0	0	0	0	0	0	0	0	0	0	
NW	0	0	0	0	0	0	0	0	0	0	
NNW	0	0	0	0	0	0	0	0	0	0	
TOTAL	0	0	0	0	0	0	0	0	0	0	

CALM = 1 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)									
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

CALM = 100.0%

MISSING DATA = .00%

H2S Summary Statistics for 1990
Fort MacKay Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .010 PPM											
Ambient 24-hour average regulation = .003 PPM											
-BY SEASON-											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.000	.000	.000	.000	.001	.002	.002	.004	.009
Spring	.000	.000	.000	.000	.000	.000	.001	.001	.001	.002	.004
Summer	.000	.000	.000	.000	.000	.000	.000	.001	.002	.006	.009
Autumn	.000	.000	.000	.000	.000	.000	.000	.001	.001	.002	.011
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
Winter	.001	.000	.001	.009	2134	0(0.00X)	0(0.00X)				
Spring	.000	.000	.001	.004	2194	0(0.00X)	0(0.00X)				
Summer	.000	.000	.001	.009	1677	0(0.00X)	0(0.00X)				
Autumn	.000	.000	.001	.011	2148	1(0.05X)	0(0.00X)				
-BY MONTH-											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.000	.000	.000	.001	.001	.002	.003	.004	.006
Feb	.000	.000	.000	.000	.000	.001	.001	.001	.002	.003	.004
Mar	.000	.000	.000	.000	.000	.000	.001	.001	.002	.003	.004
Apr	.000	.000	.000	.000	.000	.000	.001	.001	.001	.002	.003
May	.000	.000	.000	.000	.000	.000	.000	.001	.001	.001	.003
Jun	.000	.000	.000	.000	.000	.000	.000	.001	.001	.002	.004
Jul	.000	.000	.000	.000	.000	.000	.001	.001	.003	.007	.009
Aug	.000	.000	.000	.000	.000	.000	.000	.001	.003	.005	.007
Sep	.000	.000	.000	.000	.000	.000	.001	.001	.002	.003	.011
Oct	.000	.000	.000	.000	.000	.000	.000	.001	.001	.001	.002
Nov	.000	.000	.000	.000	.000	.000	.000	.001	.001	.002	.003
Dec	.000	.000	.000	.000	.000	.000	.001	.001	.002	.005	.009
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
Jan	.001	.000	.001	.006	741	0(0.00X)	0(0.00X)				
Feb	.001	.000	.001	.004	672	0(0.00X)	0(0.00X)				
Mar	.001	.000	.001	.004	736	0(0.00X)	0(0.00X)				
Apr	.000	.000	.000	.003	716	0(0.00X)	0(0.00X)				
May	.000	.000	.000	.003	742	0(0.00X)	0(0.00X)				
Jun	.000	.000	.000	.004	718	0(0.00X)	0(0.00X)				
Jul	.001	.000	.001	.009	728	0(0.00X)	0(0.00X)				
Aug	.000	.000	.001	.007	231	0(0.00X)	0(0.00X)				
Sep	.000	.000	.001	.011	716	1(0.14X)	0(0.00X)				
Oct	.000	.000	.000	.002	713	0(0.00X)	0(0.00X)				
Nov	.000	.000	.000	.003	719	0(0.00X)	0(0.00X)				
Dec	.001	.000	.001	.009	741	0(0.00X)	0(0.00X)				
-BY YEAR-											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.000	.000	.000	.000	.001	.001	.002	.003	.011
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
1990	.000	.000	.001	.011	8173	1(0.01X)	0(0.00X)				

n/a - not applicable

* - no data

Wind Summary for 1990
Fort MacKay Monitoring Station

** calculation is for exceedances of the 1-hour regulation for H2S **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0	0	0	0	0
SSW	1	0	0	0	0	0	0	0	0	0	1
SW	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1	0	0	0	0	0	0	0	0	0	1

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSW	100.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	100.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0

CALM = .00%

MISSING DATA = .00%

Annual Average Concentration				
Year: 1990				
Pollutant: H2S [ppm]				
Year	CIMU	Fort Sask.	Fort McMurray	Fort Mackay
1976	*	*	*	*
1977	*	*	*	*
1978	*	*	*	*
1979	*	*	*	*
1980	*	*	*	*
1981	*	b	*	*
1982	*	0.000	*	*
1983	*	0.001	b	b
1984	*	0.000	0.000a	0.000
1985	*	0.000	0.000	0.000
1986	0.001	0.001	0.000	0.000
1987	0.001	0.001	0.000	0.000
1988	0.001	0.001	0.000	0.000
1989	0.001	0.001a	0.000	0.001
1990	0.001	0.001	0.000	0.000

a > 50% to < 75% of data available

b less than 50% of data available

* no data available



NO2 Summary Statistics for 1990
Edmonton Downtown Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .210 PPM											
Ambient 24-hour average regulation = .110 PPM											
Ambient annual average regulation = .030 PPM											
-----BY SEASON-----											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.007	.010	.015	.018	.024	.030	.037	.044	.047	.056	.071
Spring	.004	.007	.011	.014	.019	.026	.037	.050	.059	.084	.126
Summer	.003	.005	.008	.010	.014	.019	.025	.031	.035	.044	.064
Autumn	.003	.006	.011	.013	.018	.025	.032	.038	.043	.054	.076
SEASON Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Winter	.031	.029	.010	.064	2153			0(0.00%)	0(0.00%)		
Spring	.030	.026	.015	.122	2191			0(0.00%)	0(0.00%)		
Summer	.020	.018	.008	.061	2189			0(0.00%)	0(0.00%)		
Autumn	.026	.023	.010	.073	2042			0(0.00%)	0(0.00%)		
-----BY MONTH-----											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.007	.009	.013	.016	.021	.028	.035	.040	.044	.050	.058
Feb	.007	.012	.015	.018	.025	.031	.040	.048	.052	.062	.071
Mar	.009	.012	.017	.019	.026	.036	.051	.063	.074	.100	.126
Apr	.004	.007	.011	.014	.018	.024	.032	.040	.044	.056	.069
May	.005	.006	.009	.012	.017	.023	.030	.038	.043	.050	.058
Jun	.003	.005	.007	.009	.014	.019	.024	.030	.035	.046	.050
Jul	.003	.005	.008	.009	.014	.020	.025	.031	.035	.042	.055
Aug	.004	.006	.008	.010	.014	.020	.025	.031	.034	.042	.064
Sep	.003	.005	.008	.011	.015	.021	.028	.035	.039	.048	.055
Oct	.004	.007	.012	.014	.018	.025	.033	.039	.044	.059	.070
Nov	.005	.010	.014	.016	.022	.028	.034	.040	.044	.056	.076
Dec	.007	.010	.015	.020	.026	.032	.038	.043	.045	.048	.058
MONTH Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Jan	.028	.027	.009	.051	741			0(0.00%)	0(0.00%)		
Feb	.033	.031	.011	.064	668			0(0.00%)	0(0.00%)		
Mar	.040	.036	.019	.117	739			0(0.00%)	0(0.00%)		
Apr	.026	.023	.011	.065	712			0(0.00%)	0(0.00%)		
May	.024	.022	.010	.053	740			0(0.00%)	0(0.00%)		
Jun	.020	.018	.008	.047	713			0(0.00%)	0(0.00%)		
Jul	.020	.018	.008	.052	744			0(0.00%)	0(0.00%)		
Aug	.020	.019	.008	.060	732			0(0.00%)	0(0.00%)		
Sep	.022	.020	.010	.052	715			0(0.00%)	0(0.00%)		
Oct	.026	.024	.010	.066	736			0(0.00%)	0(0.00%)		
Nov	.028	.027	.010	.071	591			0(0.00%)	0(0.00%)		
Dec	.032	.030	.009	.051	744			0(0.00%)	0(0.00%)		
-----BY YEAR-----											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.003	.006	.010	.013	.018	.025	.033	.042	.047	.063	.126
YEAR Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
1990	.027	.024	.012	.123	8575			0(0.00%)	0(0.00%)		

n/a - not applicable

* - no data

NO2 Summary Statistics for 1990
Edmonton Residential Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .210 PPM
Ambient 24-hour average regulation = .110 PPM
Ambient annual average regulation = .030 PPM

---BY SEASON---

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.002	.005	.008	.018	.035	.047	.055	.060	.073	.123
Spring	.001	.002	.004	.006	.010	.018	.033	.047	.055	.071	.093
Summer	.000	.002	.004	.006	.009	.014	.023	.033	.039	.053	.072
Autumn	.000	.002	.006	.009	.014	.024	.037	.048	.054	.068	.102

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.033	.025	.018	.123	2157	0(0.00X)	0(0.00X)
Spring	.023	.017	.016	.092	2197	0(0.00X)	0(0.00X)
Summer	.017	.014	.011	.072	2205	0(0.00X)	0(0.00X)
Autumn	.027	.022	.016	.102	2170	0(0.00X)	0(0.00X)

---BY MONTH---

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.004	.007	.014	.031	.044	.052	.058	.068	.105
Feb	.001	.003	.006	.009	.017	.034	.046	.055	.059	.076	.123
Mar	.001	.003	.006	.009	.014	.026	.042	.055	.063	.076	.088
Apr	.001	.002	.004	.005	.008	.014	.028	.044	.051	.068	.093
May	.002	.003	.005	.006	.009	.015	.028	.039	.045	.052	.059
Jun	.001	.002	.004	.006	.009	.013	.022	.033	.039	.050	.060
Jul	.000	.002	.005	.005	.008	.013	.021	.033	.039	.051	.072
Aug	.001	.002	.005	.006	.010	.015	.025	.034	.041	.055	.063
Sep	.000	.001	.006	.008	.012	.020	.030	.040	.045	.058	.067
Oct	.001	.002	.006	.008	.015	.025	.037	.047	.052	.068	.095
Nov	.001	.003	.007	.010	.017	.032	.044	.053	.059	.075	.102
Dec	.002	.003	.005	.010	.020	.039	.049	.056	.061	.075	.106

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.030	.020	.018	.105	741	0(0.00X)	0(0.00X)
Feb	.033	.027	.018	.122	672	0(0.00X)	0(0.00X)
Mar	.029	.023	.018	.087	736	0(0.00X)	0(0.00X)
Apr	.020	.015	.016	.092	717	0(0.00X)	0(0.00X)
May	.019	.015	.013	.057	744	0(0.00X)	0(0.00X)
Jun	.017	.013	.011	.059	719	0(0.00X)	0(0.00X)
Jul	.016	.013	.011	.072	744	0(0.00X)	0(0.00X)
Aug	.018	.015	.011	.062	742	0(0.00X)	0(0.00X)
Sep	.022	.018	.012	.067	720	0(0.00X)	0(0.00X)
Oct	.027	.022	.015	.094	743	0(0.00X)	0(0.00X)
Nov	.032	.026	.017	.101	707	0(0.00X)	0(0.00X)
Dec	.036	.029	.018	.104	744	0(0.00X)	0(0.00X)

---BY YEAR---

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.002	.005	.007	.011	.021	.037	.049	.055	.068	.123

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.025	.019	.017	.123	8729	0(0.00X)	0(0.00X)

n/a - not applicable

* - no data

NO2 Summary Statistics for 1990
Edmonton Industrial Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .210 PPM											
Ambient 24-hour average regulation = .110 PPM											
Ambient annual average regulation = .030 PPM											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.001	.003	.005	.006	.011	.020	.031	.038	.043	.052	.080
Spring	.000	.002	.004	.005	.009	.015	.027	.041	.048	.057	.078
Summer	.000	.002	.003	.004	.007	.011	.018	.026	.030	.038	.071
Autumn	.003	.004	.006	.008	.011	.019	.030	.038	.043	.050	.069
-----BY SEASON-----											
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
Winter	.021	.017	.012	.079	2123	0(0.00X)	0(0.00X)				
Spring	.019	.015	.014	.078	2140	0(0.00X)	0(0.00X)				
Summer	.013	.010	.009	.071	2184	0(0.00X)	0(0.00X)				
Autumn	.021	.018	.012	.066	2157	0(0.00X)	0(0.00X)				
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.001	.002	.004	.007	.010	.018	.027	.033	.035	.041	.080
Feb	.002	.003	.004	.006	.010	.018	.030	.038	.043	.055	.068
Mar	.001	.001	.005	.006	.011	.023	.035	.047	.052	.062	.069
Apr	.002	.003	.004	.006	.009	.014	.025	.041	.048	.056	.078
May	.000	.001	.003	.004	.007	.011	.019	.028	.035	.042	.051
Jun	.002	.002	.004	.005	.007	.011	.017	.024	.028	.036	.050
Jul	.001	.002	.003	.004	.007	.011	.019	.027	.032	.040	.071
Aug	.000	.001	.002	.004	.006	.011	.017	.025	.030	.038	.049
Sep	.004	.005	.006	.007	.010	.015	.022	.031	.034	.041	.045
Oct	.004	.006	.007	.008	.012	.020	.031	.040	.044	.050	.056
Nov	.003	.004	.006	.008	.014	.023	.034	.042	.045	.052	.069
Dec	.001	.003	.005	.007	.013	.023	.035	.043	.045	.052	.056
-----BY MONTH-----											
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
Jan	.019	.016	.010	.079	740	0(0.00X)	0(0.00X)				
Feb	.021	.017	.013	.066	656	0(0.00X)	0(0.00X)				
Mar	.025	.019	.015	.068	732	0(0.00X)	0(0.00X)				
Apr	.019	.015	.014	.076	709	0(0.00X)	0(0.00X)				
May	.014	.011	.010	.051	699	0(0.00X)	0(0.00X)				
Jun	.013	.011	.008	.048	711	0(0.00X)	0(0.00X)				
Jul	.014	.011	.009	.070	744	0(0.00X)	0(0.00X)				
Aug	.013	.009	.009	.049	729	0(0.00X)	0(0.00X)				
Sep	.017	.015	.009	.041	706	0(0.00X)	0(0.00X)				
Oct	.022	.019	.012	.052	734	0(0.00X)	0(0.00X)				
Nov	.024	.021	.012	.066	717	0(0.00X)	0(0.00X)				
Dec	.024	.020	.013	.055	727	0(0.00X)	0(0.00X)				
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.002	.004	.006	.009	.016	.027	.037	.043	.052	.080
-----BY YEAR-----											
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
						1 hour	24 hour				
1990	.019	.015	.012	.080	8604	0(0.00X)	0(0.00X)				

n/a - not applicable

* - no data

NO2 Summary Statistics for 1990
Calgary Downtown Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .210 PPM											
Ambient 24-hour average regulation = .110 PPM											
Ambient annual average regulation = .030 PPM											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.004	.014	.020	.025	.032	.040	.047	.056	.062	.080	.182
Spring	.008	.013	.017	.020	.027	.036	.045	.052	.056	.063	.084
Summer	.004	.008	.012	.014	.019	.026	.032	.039	.043	.050	.070
Autumn	.002	.009	.014	.018	.025	.032	.040	.048	.054	.070	.099
SEASON Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Winter	.041	.038	.014		.178	2101		0(0.00X)	0(0.00X)		
Spring	.036	.034	.012		.076	2168		0(0.00X)	0(0.00X)		
Summer	.026	.025	.010		.066	2131		0(0.00X)	0(0.00X)		
Autumn	.033	.031	.012		.097	1832		0(0.00X)	0(0.00X)		
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.011	.014	.019	.023	.030	.038	.043	.049	.056	.070	.107
Feb	.004	.014	.019	.025	.033	.040	.047	.054	.059	.073	.098
Mar	.008	.012	.019	.023	.032	.043	.050	.057	.060	.068	.084
Apr	.011	.013	.017	.019	.025	.032	.043	.050	.053	.059	.070
May	.009	.012	.016	.019	.026	.034	.041	.047	.049	.056	.063
Jun	.004	.007	.010	.013	.019	.026	.032	.038	.041	.046	.059
Jul	.006	.009	.012	.014	.018	.026	.032	.038	.043	.052	.064
Aug	.008	.011	.013	.014	.020	.027	.033	.041	.045	.051	.070
Sep	.009	.013	.016	.018	.024	.032	.040	.049	.056	.071	.090
Oct	.002	.004	.013	.018	.027	.033	.039	.046	.053	.070	.099
Nov	.007	.009	.012	.017	.023	.032	.041	.049	.054	.061	.071
Dec	.013	.016	.023	.027	.034	.043	.052	.062	.069	.086	.182
MONTH Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Jan	.037	.036	.011		.096	730		0(0.00X)	0(0.00X)		
Feb	.040	.038	.012		.094	641		0(0.00X)	0(0.00X)		
Mar	.041	.039	.013		.076	728		0(0.00X)	0(0.00X)		
Apr	.034	.032	.011		.059	710		0(0.00X)	0(0.00X)		
May	.034	.032	.010		.054	730		0(0.00X)	0(0.00X)		
Jun	.026	.024	.009		.055	712		0(0.00X)	0(0.00X)		
Jul	.026	.024	.010		.058	693		0(0.00X)	0(0.00X)		
Aug	.027	.026	.010		.062	726		0(0.00X)	0(0.00X)		
Sep	.033	.031	.013		.081	714		0(0.00X)	0(0.00X)		
Oct	.033	.031	.012		.097	729		0(0.00X)	0(0.00X)		
Nov	.033	.030	.012		.064	389		0(0.00X)	0(0.00X)		
Dec	.044	.042	.016		.169	730		0(0.00X)	0(0.00X)		
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.002	.010	.015	.018	.025	.033	.042	.050	.056	.070	.182
YEAR Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
1990	.034	.031	.013		.180	8232		0(0.00X)	0(0.00X)		

n/a - not applicable

* - no data

NO2 Summary Statistics for 1990
 Calgary Residential Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .210 PPM											
Ambient 24-hour average regulation = .110 PPM											
Ambient annual average regulation = .030 PPM											
--BY SEASON--											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.002	.003	.005	.007	.012	.020	.030	.041	.046	.064	.083
Spring	.003	.004	.005	.006	.009	.014	.021	.030	.038	.051	.060
Summer	.002	.003	.005	.006	.008	.011	.015	.021	.026	.037	.063
Autumn	.001	.003	.006	.008	.012	.017	.026	.035	.040	.047	.064
SEASON Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Winter	.022	.018	.014	.081	2144			0(0.00X)	0(0.00X)		
Spring	.016	.014	.010	.057	2102			0(0.00X)	0(0.00X)		
Summer	.013	.011	.007	.061	2170			0(0.00X)	0(0.00X)		
Autumn	.019	.017	.010	.063	2145			0(0.00X)	0(0.00X)		
--BY MONTH--											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.002	.003	.006	.008	.013	.022	.034	.043	.051	.067	.074
Feb	.002	.003	.006	.008	.012	.020	.030	.041	.047	.060	.075
Mar	.003	.004	.007	.008	.012	.018	.026	.040	.048	.056	.060
Apr	.003	.004	.005	.006	.008	.012	.019	.027	.033	.042	.049
May	.003	.003	.005	.006	.008	.012	.018	.024	.030	.041	.056
Jun	.002	.002	.004	.005	.007	.010	.014	.021	.026	.033	.041
Jul	.003	.004	.005	.006	.008	.011	.015	.022	.026	.038	.049
Aug	.002	.004	.007	.008	.010	.013	.016	.020	.024	.038	.063
Sep	.007	.007	.009	.010	.012	.015	.020	.027	.030	.035	.042
Oct	.001	.003	.004	.006	.011	.018	.028	.037	.044	.050	.064
Nov	.001	.004	.006	.008	.012	.020	.029	.038	.041	.047	.050
Dec	.003	.003	.005	.006	.011	.018	.029	.039	.043	.055	.083
MONTH Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Jan	.025	.020	.015	.072	738			0(0.00X)	0(0.00X)		
Feb	.022	.018	.013	.073	669			0(0.00X)	0(0.00X)		
Mar	.021	.018	.012	.057	644			0(0.00X)	0(0.00X)		
Apr	.015	.012	.009	.046	717			0(0.00X)	0(0.00X)		
May	.014	.012	.008	.053	741			0(0.00X)	0(0.00X)		
Jun	.012	.010	.007	.039	717			0(0.00X)	0(0.00X)		
Jul	.013	.011	.007	.046	740			0(0.00X)	0(0.00X)		
Aug	.014	.013	.006	.061	713			0(0.00X)	0(0.00X)		
Sep	.017	.016	.007	.035	717			0(0.00X)	0(0.00X)		
Oct	.020	.016	.012	.063	716			0(0.00X)	0(0.00X)		
Nov	.021	.018	.011	.049	712			0(0.00X)	0(0.00X)		
Dec	.021	.017	.012	.080	737			0(0.00X)	0(0.00X)		
--BY YEAR--											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.001	.003	.005	.006	.010	.015	.023	.034	.040	.033	.083
YEAR Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
1990	.018	.015	.011	.082	8561			0(0.00X)	0(0.00X)		

n/a - not applicable

* - no data

NO2 Summary Statistics for 1990
Calgary Industrial Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .210 PPM
Ambient 24-hour average regulation = .110 PPM
Ambient annual average regulation = .030 PPM

---BY SEASON---

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.002	.005	.009	.013	.022	.033	.042	.052	.060	.090	.134
Spring	.002	.005	.008	.011	.017	.027	.036	.043	.047	.056	.075
Summer	.002	.003	.007	.009	.014	.021	.029	.035	.039	.045	.065
Autumn	.002	.003	.008	.011	.018	.027	.035	.042	.048	.062	.107

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.033	.029	.017	.132	2143	0(0.00X)	0(0.00X)
Spring	.027	.024	.012	.073	2194	0(0.00X)	0(0.00X)
Summer	.022	.019	.010	.063	2195	0(0.00X)	0(0.00X)
Autumn	.027	.024	.013	.105	2149	0(0.00X)	0(0.00X)

---BY MONTH---

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.005	.006	.010	.014	.024	.035	.045	.054	.065	.092	.115
Feb	.004	.007	.011	.014	.024	.035	.043	.052	.059	.076	.101
Mar	.004	.006	.009	.013	.020	.032	.040	.047	.050	.057	.075
Apr	.002	.003	.007	.008	.014	.024	.033	.040	.043	.054	.067
May	.004	.006	.008	.011	.017	.026	.034	.039	.043	.049	.059
Jun	.002	.003	.004	.007	.011	.019	.029	.035	.038	.043	.049
Jul	.004	.006	.008	.010	.015	.021	.028	.034	.038	.044	.065
Aug	.003	.005	.008	.010	.016	.021	.029	.036	.039	.046	.063
Sep	.003	.004	.009	.013	.019	.027	.034	.043	.048	.059	.072
Oct	.002	.003	.005	.008	.016	.027	.036	.041	.048	.064	.107
Nov	.002	.006	.011	.013	.019	.029	.036	.042	.047	.062	.075
Dec	.002	.004	.007	.011	.019	.030	.040	.048	.056	.091	.134

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.036	.031	.017	.110	734	0(0.00X)	0(0.00X)
Feb	.034	.030	.015	.097	669	0(0.00X)	0(0.00X)
Mar	.031	.028	.013	.071	740	0(0.00X)	0(0.00X)
Apr	.024	.021	.012	.065	716	0(0.00X)	0(0.00X)
May	.026	.023	.011	.055	738	0(0.00X)	0(0.00X)
Jun	.020	.017	.011	.047	714	0(0.00X)	0(0.00X)
Jul	.022	.020	.009	.061	741	0(0.00X)	0(0.00X)
Aug	.022	.020	.010	.060	740	0(0.00X)	0(0.00X)
Sep	.027	.024	.012	.069	717	0(0.00X)	0(0.00X)
Oct	.027	.022	.014	.105	715	0(0.00X)	0(0.00X)
Nov	.029	.026	.012	.073	717	0(0.00X)	0(0.00X)
Dec	.031	.026	.017	.132	740	0(0.00X)	0(0.00X)

---BY YEAR---

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.002	.004	.008	.010	.017	.026	.036	.044	.049	.067	.134

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.027	.024	.014	.132	8681	0(0.00X)	0(0.00X)

n/a - not applicable

* - no data

NO2 Summary Statistics for 1990
 Fort Saskatchewan Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .210 PPM											
Ambient 24-hour average regulation = .110 PPM											
Ambient annual average regulation = .030 PPM											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.001	.002	.006	.016	.032	.040	.045	.057	.074
Spring	.000	.000	.001	.001	.003	.006	.014	.027	.035	.048	.068
Summer	.000	.001	.002	.003	.004	.006	.011	.017	.020	.026	.037
Autumn	.000	.001	.003	.003	.005	.011	.020	.028	.032	.040	.050
SEASON Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Winter	.019	.010	.015	.074	1942			0(0.00X)	0(0.00X)		
Spring	.010	.005	.011	.068	2122			0(0.00X)	0(0.00X)		
Summer	.008	.006	.006	.037	2035			0(0.00X)	0(0.00X)		
Autumn	.013	.010	.010	.050	1985			0(0.00X)	0(0.00X)		
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.001	.001	.004	.013	.030	.037	.040	.046	.050
Feb	.000	.000	.001	.002	.006	.017	.036	.048	.052	.061	.074
Mar	.000	.000	.001	.003	.005	.010	.023	.039	.046	.058	.068
Apr	.000	.000	.000	.001	.001	.004	.010	.020	.026	.034	.040
May	.000	.000	.001	.001	.002	.006	.011	.020	.026	.036	.043
Jun	.000	.000	.001	.002	.004	.006	.010	.017	.020	.028	.037
Jul	.001	.002	.003	.003	.004	.006	.009	.016	.020	.024	.030
Aug	.000	.001	.002	.003	.005	.007	.012	.017	.020	.026	.036
Sep	.000	.002	.003	.003	.005	.009	.016	.023	.027	.034	.045
Oct	.002	.003	.003	.004	.006	.011	.020	.027	.030	.037	.046
Nov	.000	.001	.002	.003	.005	.014	.024	.033	.038	.044	.050
Dec	.000	.000	.001	.003	.007	.016	.029	.037	.039	.045	.048
MONTH Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Jan	.017	.008	.014	.050	728			0(0.00X)	0(0.00X)		
Feb	.022	.012	.017	.074	672			0(0.00X)	0(0.00X)		
Mar	.015	.009	.014	.068	712			0(0.00X)	0(0.00X)		
Apr	.007	.002	.008	.040	689			0(0.00X)	0(0.00X)		
May	.008	.004	.008	.043	721			0(0.00X)	0(0.00X)		
Jun	.008	.005	.006	.037	563			0(0.00X)	0(0.00X)		
Jul	.008	.006	.005	.029	739			0(0.00X)	0(0.00X)		
Aug	.009	.007	.006	.036	733			0(0.00X)	0(0.00X)		
Sep	.011	.008	.008	.045	687			0(0.00X)	0(0.00X)		
Oct	.014	.011	.009	.044	733			0(0.00X)	0(0.00X)		
Nov	.016	.010	.012	.050	565			0(0.00X)	0(0.00X)		
Dec	.018	.011	.013	.048	542			0(0.00X)	0(0.00X)		
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.001	.002	.004	.008	.018	.031	.037	.049	.074
YEAR Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
1990	.013	.007	.012	.074	8084			0(0.00X)	0(0.00X)		

n/a - not applicable

* - no data

NO2 Summary Statistics for 1990
Fort McMurray Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .210 PPM
Ambient 24-hour average regulation = .110 PPM
Ambient annual average regulation = .030 PPM

-BY SEASON-

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.002	.002	.003	.004	.008	.014	.020	.026	.030	.041	.074
Spring	.001	.002	.002	.003	.004	.007	.014	.027	.035	.049	.069
Summer	.000	.001	.002	.002	.003	.005	.009	.015	.020	.029	.040
Autumn	.001	.002	.002	.003	.004	.008	.015	.021	.025	.033	.039

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.015	.012	.009	.072	2147	0(0.00X)	0(0.00X)
Spring	.011	.008	.011	.068	2089	0(0.00X)	0(0.00X)
Summer	.007	.005	.006	.040	1446	0(0.00X)	0(0.00X)
Autumn	.010	.008	.007	.038	1451	0(0.00X)	0(0.00X)

-BY MONTH-

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.002	.003	.003	.004	.008	.015	.021	.025	.030	.035	.051
Feb	.002	.002	.003	.004	.007	.012	.019	.028	.035	.045	.074
Mar	.002	.002	.003	.003	.005	.010	.021	.037	.042	.055	.069
Apr	.002	.002	.002	.002	.003	.006	.013	.024	.032	.048	.068
May	.001	.002	.003	.003	.004	.006	.011	.020	.028	.037	.062
Jun	.001	.001	.002	.002	.003	.005	.009	.014	.019	.026	.040
Jul	.000	.001	.002	.002	.003	.005	.009	.015	.020	.029	.037
Aug	*	*	*	*	*	*	*	*	*	*	*
Sep	*	*	*	*	*	*	*	*	*	*	*
Oct	.001	.002	.002	.002	.004	.007	.012	.018	.020	.025	.032
Nov	.002	.002	.002	.003	.005	.010	.018	.024	.028	.035	.039
Dec	.002	.002	.002	.003	.008	.014	.020	.025	.028	.031	.042

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.015	.012	.009	.049	738	0(0.00X)	0(0.00X)
Feb	.014	.011	.010	.072	672	0(0.00X)	0(0.00X)
Mar	.015	.010	.013	.067	630	0(0.00X)	0(0.00X)
Apr	.010	.007	.010	.066	720	0(0.00X)	0(0.00X)
May	.009	.007	.008	.061	739	0(0.00X)	0(0.00X)
Jun	.007	.005	.006	.039	706	0(0.00X)	0(0.00X)
Jul	.007	.005	.006	.037	740	0(0.00X)	0(0.00X)
Aug	*	*	*	*	*	*	*
Sep	*	*	*	*	*	*	*
Oct	.009	.007	.006	.031	731	0(0.00X)	0(0.00X)
Nov	.012	.009	.008	.037	720	0(0.00X)	0(0.00X)
Dec	.015	.012	.008	.040	737	0(0.00X)	0(0.00X)

-BY YEAR-

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.002	.002	.003	.004	.008	.016	.024	.029	.041	.074

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.011	.008	.009	.074	7133	0(0.00X)	0(0.00X)

n/a - not applicable

* - no data

Annual Average Concentration									
Year: 1990									
Pollutant: NO2 [ppm]									
Year	EDMU	ERMU	EIMU	CDMU	CRMU	CIMU	Fort Sask.	Fort McMurray	Fort Mackay
1976	0.053	0.024	0.009	0.032	0.016	0.024	*	0.032	*
1977	0.039	0.020	0.016	0.044	0.023	0.031	*	*	*
1978	0.042	0.028	0.019	0.046	0.027	0.032	*	*	*
1979	0.043	0.029	0.023	0.047	0.023	0.027	*	0.010a	*
1980	0.036	0.021	0.017	0.041	0.019	0.025	*	b	*
1981	0.043	0.031	0.022	0.036	0.018	0.020	b	0.010	*
1982	0.037	0.027	0.017	0.047	0.018	0.030	0.020	0.010	*
1983	0.027	0.025	0.018	0.037	0.018	0.028	0.020	0.010	b
1984	0.026	0.023	0.013	0.033	0.018	0.028	0.020	0.010a	0.000
1985	0.029	0.020	0.019	0.036	0.015	0.027	0.010	0.010a	0.000
1986	0.030	0.019	0.016	0.035	0.021	0.027	0.013	0.010	0.003
1987	0.031	0.020	0.016	0.034	0.020	0.025	0.014	0.010	b
1988	0.028	0.020	0.016	0.035	0.019	0.026	0.013	0.010	*
1989	0.026	0.022	0.015	0.035	0.020	0.029	0.009a	0.010	*
1990	0.027	0.025	0.019	0.034	0.018	0.027	0.013	0.011	*

a ≥ 50% to < 75% of data available

b less than 50% of data available

* no data available



NO Summary Statistics for 1990
Edmonton Downtown Monitoring Station
Units are PPM (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.002	.004	.006	.009	.017	.033	.058	.090	.117	.189	.377
Spring	.000	.002	.004	.005	.010	.020	.035	.067	.100	.189	.515
Summer	.000	.002	.003	.004	.008	.015	.023	.039	.050	.078	.147
Autumn	.001	.003	.005	.007	.014	.028	.054	.099	.130	.263	.518
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.044	.031	.040	.375	2153	n/a					
Spring	.031	.019	.042	.515	2191	n/a					
Summer	.019	.014	.016	.147	2189	n/a					
Autumn	.044	.027	.053	.517	2042	n/a					
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.002	.003	.006	.008	.015	.034	.061	.094	.133	.189	.253
Feb	.003	.005	.007	.010	.017	.034	.056	.086	.114	.257	.377
Mar	.002	.004	.006	.009	.015	.029	.058	.101	.142	.319	.515
Apr	.002	.003	.005	.007	.010	.019	.030	.050	.078	.155	.322
May	.000	.001	.003	.003	.007	.015	.025	.041	.056	.091	.160
Jun	.001	.002	.003	.004	.007	.014	.023	.034	.046	.070	.134
Jul	.001	.002	.003	.004	.008	.015	.025	.036	.049	.066	.147
Aug	.000	.001	.003	.004	.008	.017	.030	.043	.054	.087	.147
Sep	.001	.002	.004	.005	.010	.022	.035	.063	.100	.188	.234
Oct	.003	.003	.006	.008	.015	.032	.062	.106	.152	.368	.518
Nov	.002	.004	.007	.010	.018	.038	.063	.107	.151	.226	.424
Dec	.002	.003	.006	.010	.018	.032	.056	.084	.106	.146	.188
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.046	.030	.041	.251	741	n/a					
Feb	.045	.031	.045	.374	668	n/a					
Mar	.048	.030	.059	.513	739	n/a					
Apr	.027	.018	.031	.320	712	n/a					
May	.019	.012	.019	.160	740	n/a					
Jun	.017	.013	.015	.133	713	n/a					
Jul	.019	.013	.015	.146	744	n/a					
Aug	.022	.015	.018	.147	732	n/a					
Sep	.030	.020	.034	.233	715	n/a					
Oct	.052	.031	.065	.515	736	n/a					
Nov	.051	.035	.050	.422	591	n/a					
Dec	.041	.030	.032	.186	744	n/a					
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.002	.004	.006	.011	.022	.042	.074	.104	.194	.518
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.034	.021	.041	.518	8575	n/a					

n/a - not applicable

* - no data

NO Summary Statistics for 1990
Edmonton Residential Monitoring Station
Units are PPM (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.002	.004	.012	.033	.075	.137	.195	.333	.741
Spring	.000	.000	.001	.002	.004	.012	.026	.068	.109	.360	.775
Summer	.000	.000	.001	.002	.004	.010	.017	.033	.050	.096	.207
Autumn	.000	.000	.002	.003	.010	.021	.058	.124	.173	.321	.976

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.058	.024	.073	.741	2157	n/a					
Spring	.029	.009	.062	.775	2197	n/a					
Summer	.015	.008	.019	.207	2205	n/a					
Autumn	.048	.018	.070	.976	2170	n/a					
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.002	.003	.011	.030	.075	.156	.231	.312	.531
Feb	.000	.000	.001	.003	.010	.031	.068	.121	.164	.435	.741
Mar	.000	.001	.002	.004	.010	.018	.044	.099	.188	.534	.775
Apr	.000	.000	.001	.002	.005	.011	.021	.055	.103	.210	.370
May	.000	.000	.001	.001	.003	.007	.016	.040	.070	.142	.232
Jun	.000	.000	.001	.002	.004	.010	.017	.030	.040	.070	.153
Jul	.000	.000	.001	.002	.004	.009	.016	.030	.046	.081	.152
Aug	.000	.001	.001	.002	.005	.011	.020	.044	.062	.124	.207
Sep	.000	.000	.002	.003	.008	.016	.036	.091	.128	.230	.306
Oct	.000	.000	.002	.004	.011	.024	.055	.122	.186	.338	.976
Nov	.000	.000	.001	.003	.011	.031	.077	.143	.209	.332	.547
Dec	.000	.000	.002	.005	.014	.040	.081	.134	.184	.285	.602

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.059	.022	.075	.531	741	n/a					
Feb	.054	.021	.081	.741	672	n/a					
Mar	.048	.018	.091	.775	736	n/a					
Apr	.024	.008	.042	.370	717	n/a					
May	.016	.005	.028	.232	744	n/a					
Jun	.014	.008	.014	.153	719	n/a					
Jul	.014	.007	.017	.152	744	n/a					
Aug	.019	.009	.025	.207	742	n/a					
Sep	.033	.015	.046	.306	720	n/a					
Oct	.051	.020	.082	.976	743	n/a					
Nov	.059	.020	.075	.547	707	n/a					
Dec	.059	.028	.064	.602	744	n/a					
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.001	.002	.006	.016	.042	.095	.145	.306	.976

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.037	.013	.062	.976	8729	n/a					

n/a - not applicable

* - no data

NO Summary Statistics for 1990
Edmonton Industrial Monitoring Station
Units are PPM (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.001	.001	.003	.010	.023	.061	.087	.133	.236
Spring	.000	.000	.001	.002	.005	.011	.020	.037	.059	.111	.240
Summer	.000	.001	.003	.004	.006	.011	.019	.028	.038	.071	.106
Autumn	.000	.000	.001	.002	.005	.012	.028	.061	.095	.186	.297
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.001	.001	.002	.008	.021	.055	.084	.121	.196
Feb	.000	.000	.001	.001	.004	.010	.025	.056	.086	.144	.236
Mar	.000	.001	.001	.003	.006	.014	.028	.050	.074	.120	.240
Apr	.000	.000	.001	.002	.004	.011	.018	.033	.065	.112	.177
May	.000	.000	.001	.003	.006	.010	.016	.027	.037	.070	.116
Jun	.000	.001	.003	.004	.005	.007	.012	.019	.027	.051	.080
Jul	.000	.001	.005	.005	.007	.010	.015	.024	.036	.071	.095
Aug	.000	.001	.003	.005	.012	.018	.025	.034	.047	.079	.106
Sep	.000	.000	.001	.001	.003	.008	.016	.037	.060	.121	.253
Oct	.000	.000	.002	.004	.009	.015	.035	.070	.123	.232	.297
Nov	.000	.001	.001	.003	.006	.014	.034	.070	.094	.139	.211
Dec	.000	.000	.001	.002	.005	.011	.027	.066	.091	.127	.177
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.001	.002	.005	.011	.022	.046	.072	.133	.297
-----BY SEASON-----											
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.021	.007	.029	.236	2123	n/a					
Spring	.017	.009	.022	.240	2140	n/a					
Summer	.015	.010	.013	.106	2185	n/a					
Autumn	.025	.011	.036	.297	2157	n/a					
-----BY MONTH-----											
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.019	.006	.028	.196	740	n/a					
Feb	.022	.008	.031	.236	656	n/a					
Mar	.022	.012	.027	.240	732	n/a					
Apr	.016	.008	.023	.177	709	n/a					
May	.013	.008	.013	.116	699	n/a					
Jun	.010	.008	.010	.080	711	n/a					
Jul	.014	.010	.012	.095	744	n/a					
Aug	.020	.015	.015	.106	730	n/a					
Sep	.016	.006	.026	.253	706	n/a					
Oct	.032	.015	.045	.297	734	n/a					
Nov	.027	.013	.032	.211	717	n/a					
Dec	.023	.010	.029	.177	727	n/a					
-----BY YEAR-----											
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.020	.009	.027	.297	8605	n/a					

n/a - not applicable

* - no data

NO Summary Statistics for 1990
 Calgary Downtown Monitoring Station
 Units are PPM (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.001	.002	.003	.007	.023	.055	.124	.187	.388	.709
Spring	.000	.000	.001	.002	.003	.008	.021	.047	.075	.221	.394
Summer	.000	.000	.001	.002	.003	.007	.015	.029	.048	.097	.222
Autumn	.000	.000	.000	.001	.005	.013	.040	.086	.121	.274	.530
-----BY MONTH-----											
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.049	.020	.076	.709	2101	n/a					
Spring	.020	.006	.039	.394	2168	n/a					
Summer	.013	.006	.019	.222	2131	n/a					
Autumn	.033	.008	.053	.530	1833	n/a					
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.001	.001	.002	.003	.007	.024	.052	.121	.200	.396	.695
Feb	.000	.001	.002	.002	.006	.022	.052	.115	.150	.320	.604
Mar	.000	.000	.000	.001	.004	.013	.030	.066	.119	.328	.394
Apr	.000	.000	.001	.002	.003	.006	.018	.043	.067	.141	.339
May	.000	.000	.001	.002	.003	.007	.016	.034	.051	.090	.134
Jun	.000	.000	.000	.001	.003	.005	.011	.024	.038	.078	.101
Jul	.000	.000	.001	.002	.003	.007	.015	.029	.044	.089	.109
Aug	.000	.001	.002	.003	.004	.008	.018	.036	.063	.134	.222
Sep	.000	.000	.002	.003	.005	.011	.029	.068	.093	.167	.382
Oct	.000	.000	.000	.001	.004	.014	.040	.099	.150	.296	.530
Nov	.000	.000	.000	.000	.005	.021	.058	.099	.125	.290	.361
Dec	.000	.001	.002	.004	.008	.022	.064	.134	.188	.356	.709
-----BY MONTH-----											
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.050	.021	.081	.694	730	n/a					
Feb	.045	.018	.070	.604	641	n/a					
Mar	.031	.006	.056	.394	728	n/a					
Apr	.017	.006	.029	.339	710	n/a					
May	.014	.006	.019	.134	730	n/a					
Jun	.010	.004	.014	.101	712	n/a					
Jul	.013	.006	.016	.109	693	n/a					
Aug	.017	.009	.025	.222	726	n/a					
Sep	.025	.011	.037	.382	714	n/a					
Oct	.038	.006	.063	.530	729	n/a					
Nov	.040	.006	.053	.361	390	n/a					
Dec	.051	.022	.077	.709	730	n/a					
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.001	.002	.004	.010	.030	.072	.112	.272	.709
-----BY YEAR-----											
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.029	.008	.053	.709	8233	n/a					

n/a - not applicable

* - no data

NO Summary Statistics for 1990
 Calgary Residential Monitoring Station
 Units are PPM (parts per million)

No regulations											
--BY SEASON--											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.001	.001	.002	.004	.014	.051	.099	.214	.541
Spring	.000	.000	.000	.001	.001	.002	.003	.008	.018	.100	.344
Summer	.000	.000	.000	.000	.001	.001	.003	.006	.010	.024	.063
Autumn	.000	.000	.000	.001	.001	.004	.010	.030	.030	.138	.244
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.019	.004	.042	.541	2144	n/a					
Spring	.006	.002	.022	.344	2102	n/a					
Summer	.003	.001	.005	.063	2170	n/a					
Autumn	.012	.002	.026	.244	2143	n/a					
--BY MONTH--											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.000	.001	.001	.004	.019	.077	.138	.283	.541
Feb	.000	.000	.001	.001	.002	.003	.010	.042	.089	.140	.416
Mar	.000	.000	.001	.001	.001	.002	.004	.016	.070	.205	.344
Apr	.000	.000	.000	.001	.001	.002	.003	.006	.012	.036	.212
May	.000	.000	.000	.001	.001	.002	.003	.006	.011	.039	.100
Jun	.000	.000	.000	.000	.001	.001	.002	.004	.007	.015	.033
Jul	.000	.000	.000	.000	.001	.001	.002	.005	.008	.018	.038
Aug	.000	.000	.000	.000	.001	.002	.004	.008	.013	.032	.063
Sep	.000	.000	.000	.001	.001	.002	.006	.016	.025	.039	.088
Oct	.000	.000	.000	.000	.001	.003	.009	.035	.066	.151	.244
Nov	.000	.000	.001	.001	.003	.006	.017	.038	.071	.175	.242
Dec	.000	.000	.001	.001	.002	.005	.014	.036	.077	.121	.185
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.026	.003	.058	.541	738	n/a					
Feb	.016	.005	.034	.416	669	n/a					
Mar	.012	.002	.036	.344	644	n/a					
Apr	.004	.002	.011	.212	717	n/a					
May	.003	.001	.007	.100	741	n/a					
Jun	.002	.000	.003	.033	717	n/a					
Jul	.002	.001	.004	.038	740	n/a					
Aug	.004	.001	.006	.063	713	n/a					
Sep	.006	.002	.010	.088	717	n/a					
Oct	.014	.002	.030	.244	716	n/a					
Nov	.017	.005	.031	.242	712	n/a					
Dec	.015	.004	.026	.185	737	n/a					
--BY YEAR--											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.000	.001	.001	.002	.006	.021	.043	.138	.541
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.010	.002	.028	.541	8561	n/a					

n/a - not applicable

* - no data

NO Summary Statistics for 1990
 Calgary Industrial Monitoring Station
 Units are PPM (parts per million)

Units are PPM (parts per million)

No regulations											
--BY SEASON--											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.000	.001	.003	.029	.112	.242	.344	.555	.811
Spring	.000	.000	.000	.000	.002	.006	.025	.074	.125	.334	.669
Summer	.000	.000	.000	.000	.001	.004	.017	.041	.065	.130	.360
Autumn	.000	.000	.000	.001	.002	.013	.056	.129	.207	.393	.853
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.083	.012	.123	.811	2143	n/a					
Spring	.028	.003	.063	.669	2194	n/a					
Summer	.015	.001	.027	.360	2195	n/a					
Autumn	.046	.006	.082	.853	2149	n/a					
--BY MONTH--											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.001	.002	.005	.041	.135	.306	.397	.570	.795
Feb	.000	.000	.000	.000	.003	.032	.113	.232	.297	.453	.707
Mar	.000	.000	.000	.000	.002	.009	.045	.142	.230	.465	.669
Apr	.000	.000	.000	.000	.001	.006	.019	.056	.098	.193	.551
May	.000	.000	.000	.001	.002	.005	.019	.048	.071	.109	.183
Jun	.000	.000	.000	.000	.001	.003	.013	.034	.048	.092	.182
Jul	.000	.000	.000	.000	.001	.005	.017	.039	.059	.126	.187
Aug	.000	.000	.000	.000	.002	.006	.021	.053	.079	.151	.360
Sep	.000	.000	.000	.001	.002	.008	.032	.090	.129	.243	.344
Oct	.000	.000	.000	.001	.002	.013	.057	.143	.242	.402	.853
Nov	.000	.000	.001	.001	.004	.021	.072	.155	.245	.422	.599
Dec	.000	.000	.001	.001	.002	.018	.082	.200	.295	.555	.811
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.101	.020	.140	.795	734	n/a					
Feb	.078	.008	.108	.707	669	n/a					
Mar	.047	.004	.092	.669	740	n/a					
Apr	.021	.002	.045	.551	716	n/a					
May	.016	.003	.026	.183	738	n/a					
Jun	.011	.001	.020	.182	714	n/a					
Jul	.015	.002	.025	.187	741	n/a					
Aug	.019	.003	.034	.360	740	n/a					
Sep	.030	.004	.052	.344	717	n/a					
Oct	.051	.005	.096	.853	715	n/a					
Nov	.058	.012	.089	.599	717	n/a					
Dec	.069	.010	.116	.811	740	n/a					
--BY YEAR--											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.000	.000	.002	.009	.042	.122	.211	.435	.853
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.043	.004	.085	.853	8681	n/a					

n/a - not applicable

* - no data

NO Summary Statistics for 1990
 Fort Saskatchewan Monitoring Station
 Units are PPM (parts per million)

No regulations											
--BY SEASON--											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.000	.000	.001	.001	.003	.008	.024	.049	.070	.123	.190
Spring	.000	.000	.001	.001	.003	.006	.010	.023	.042	.080	.230
Summer	.000	.000	.001	.001	.002	.005	.007	.012	.018	.035	.096
Autumn	.000	.000	.001	.002	.003	.007	.015	.033	.052	.100	.206
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.018	.007	.025	.190	1938	n/a					
Spring	.011	.005	.016	.230	2122	n/a					
Summer	.006	.004	.007	.096	2035	n/a					
Autumn	.014	.006	.020	.206	2071	n/a					
--BY MONTH--											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.000	.000	.001	.001	.002	.006	.023	.053	.084	.126	.186
Feb	.000	.000	.001	.002	.003	.009	.024	.051	.071	.123	.190
Mar	.000	.000	.001	.001	.002	.008	.017	.037	.057	.089	.230
Apr	.000	.000	.001	.001	.002	.005	.009	.022	.038	.080	.100
May	.000	.000	.001	.002	.003	.006	.009	.011	.017	.033	.052
Jun	.000	.000	.001	.001	.003	.005	.010	.020	.030	.037	.046
Jul	.000	.000	.001	.001	.002	.004	.005	.008	.011	.019	.040
Aug	.000	.000	.001	.002	.003	.006	.008	.012	.015	.030	.096
Sep	.000	.001	.001	.002	.004	.008	.012	.026	.040	.081	.150
Oct	.000	.000	.001	.001	.003	.005	.010	.028	.050	.084	.156
Nov	.000	.000	.001	.002	.004	.010	.021	.046	.070	.117	.206
Dec	.000	.000	.001	.001	.004	.011	.025	.039	.056	.089	.177
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.018	.006	.028	.186	728	n/a					
Feb	.019	.007	.026	.190	672	n/a					
Mar	.015	.006	.021	.230	712	n/a					
Apr	.010	.004	.017	.100	689	n/a					
May	.007	.005	.006	.052	721	n/a					
Jun	.008	.004	.009	.046	563	n/a					
Jul	.004	.003	.004	.040	739	n/a					
Aug	.007	.004	.008	.096	733	n/a					
Sep	.012	.007	.015	.150	687	n/a					
Oct	.011	.005	.017	.156	733	n/a					
Nov	.019	.008	.025	.206	651	n/a					
Dec	.018	.007	.021	.177	538	n/a					
--BY YEAR--											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.000	.000	.001	.001	.003	.006	.012	.030	.049	.094	.230
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.012	.005	.019	.230	8166	n/a					

n/a - not applicable

* - no data

NO Summary Statistics for 1990
 Fort McMurray Monitoring Station
 Units are PPM (parts per million)

No regulations											
--BY SEASON--											
SEASON	MIN	11	51	101	251	501	751	901	951	991	MAX
Winter	.000	.001	.001	.002	.002	.007	.017	.039	.061	.132	.296
Spring	.000	.000	.001	.002	.003	.005	.009	.020	.035	.092	.201
Summer	.000	.000	.000	.000	.002	.006	.011	.017	.023	.039	.068
Autumn	.001	.001	.002	.002	.003	.006	.011	.033	.058	.135	.245
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.016	.007	.027	.296	2147	n/a					
Spring	.010	.005	.016	.201	2089	n/a					
Summer	.008	.002	.008	.068	1446	n/a					
Autumn	.014	.007	.025	.244	1451	n/a					
--BY MONTH--											
MONTH	MIN	11	51	101	251	501	751	901	951	991	MAX
Jan	.001	.001	.001	.001	.002	.007	.019	.044	.064	.123	.296
Feb	.000	.000	.001	.001	.002	.006	.013	.029	.054	.141	.290
Mar	.000	.000	.000	.001	.003	.006	.013	.031	.055	.122	.175
Apr	.000	.000	.001	.002	.003	.005	.010	.020	.030	.072	.201
May	.000	.002	.002	.002	.003	.004	.008	.012	.019	.039	.101
Jun	.000	.000	.001	.002	.003	.006	.009	.013	.016	.030	.068
Jul	.000	.000	.000	.000	.001	.006	.013	.021	.028	.040	.050
Aug	*	*	*	*	*	*	*	*	*	*	*
Sep	*	*	*	*	*	*	*	*	*	*	*
Oct	.002	.003	.003	.004	.004	.006	.011	.024	.038	.075	.176
Nov	.001	.001	.002	.002	.003	.005	.012	.047	.080	.173	.245
Dec	.000	.001	.001	.002	.003	.008	.020	.041	.060	.119	.206
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.017	.007	.029	.295	738	n/a					
Feb	.014	.005	.028	.290	672	n/a					
Mar	.014	.004	.023	.175	630	n/a					
Apr	.009	.005	.015	.201	720	n/a					
May	.007	.005	.008	.101	739	n/a					
Jun	.007	.004	.006	.068	706	n/a					
Jul	.009	.001	.009	.050	740	n/a					
Aug	*	*	*	*	*	*					
Sep	*	*	*	*	*	*					
Oct	.012	.008	.016	.174	731	n/a					
Nov	.016	.006	.032	.244	720	n/a					
Dec	.016	.008	.024	.206	737	n/a					
--BY YEAR--											
YEAR	MIN	11	51	101	251	501	751	901	951	991	MAX
1990	.000	.000	.001	.002	.003	.006	.012	.027	.045	.106	.296
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.012	.005	.021	.296	7133	n/a					

n/a - not applicable

* - no data

Annual Average Concentration									
Year: 1990									
Pollutant: NO (ppm)									
Year	EDMU	ERMU	EIMU	CDMU	CRMU	CIMU	Fort Sask.	Fort McMurray	Fort Mackay
1976	**	**	**	**	**	**	*	**	*
1977	**	**	**	**	**	**	*	*	*
1978	**	**	**	**	**	**	*	*	*
1979	**	**	**	**	**	**	*	** _A	*
1980	**	**	**	**	**	**	*	b	*
1981	**	**	**	**	**	**	b	**	*
1982	**	**	**	**	**	**	**	**	*
1983	**	**	**	**	**	**	**	**	b
1984	**	**	**	**	**	**	**	** _A	**
1985	**	**	**	**	**	**	**	** _A	**
1986	**	**	**	**	**	**	**	**	**
1987	0.041	0.046	0.017	0.036	0.013	0.051	0.016	0.011	b
1988	0.036	0.036	0.017	0.039	0.013	0.056	0.013	0.010	*
1989	0.037	0.034	0.017	0.032	0.011	0.047	0.011 _A	0.009	
1990	0.034	0.037	0.020	0.029	0.010	0.043	0.012	0.012	

a 50% to <75% of data available

b less than 50% of data available

** annual average not calculated

* no data available



NOX Summary Statistics for 1990
Edmonton Downtown Monitoring Station
Units are PPM (parts per million)

No regulations

---BY SEASON---

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.010	.014	.022	.027	.041	.064	.093	.130	.158	.241	.444
Spring	.005	.009	.016	.020	.031	.043	.069	.114	.157	.257	.614
Summer	.005	.007	.011	.014	.022	.035	.049	.066	.079	.114	.209
Autumn	.003	.009	.016	.020	.033	.053	.084	.132	.169	.309	.580

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances
Winter	.074	.062	.047	.434	2153	n/a
Spring	.060	.047	.054	.609	2191	n/a
Summer	.038	.032	.023	.204	2189	n/a
Autumn	.069	.053	.060	.577	2042	n/a

---BY MONTH---

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.010	.013	.020	.024	.036	.062	.094	.132	.173	.238	.306
Feb	.011	.019	.024	.029	.043	.065	.093	.129	.163	.312	.444
Mar	.014	.017	.024	.029	.042	.065	.107	.165	.220	.414	.614
Apr	.008	.011	.016	.020	.030	.042	.059	.086	.123	.196	.377
May	.005	.007	.012	.016	.024	.038	.052	.075	.095	.135	.209
Jun	.006	.007	.011	.014	.022	.032	.043	.061	.076	.112	.178
Jul	.005	.006	.010	.014	.022	.034	.049	.065	.075	.105	.201
Aug	.006	.008	.011	.014	.023	.037	.052	.071	.083	.120	.209
Sep	.003	.006	.013	.016	.026	.043	.062	.097	.132	.227	.282
Oct	.007	.010	.017	.023	.034	.057	.096	.141	.192	.423	.580
Nov	.006	.013	.022	.028	.041	.066	.095	.145	.194	.271	.482
Dec	.011	.014	.023	.031	.044	.064	.091	.126	.150	.190	.234

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances
Jan	.073	.059	.049	.296	741	n/a
Feb	.076	.064	.054	.433	668	n/a
Mar	.087	.068	.074	.600	739	n/a
Apr	.051	.043	.039	.369	712	n/a
May	.043	.035	.027	.204	740	n/a
Jun	.036	.031	.022	.172	713	n/a
Jul	.038	.032	.022	.196	744	n/a
Aug	.041	.034	.024	.203	732	n/a
Sep	.052	.041	.040	.279	715	n/a
Oct	.077	.057	.074	.573	736	n/a
Nov	.079	.064	.058	.476	591	n/a
Dec	.072	.062	.039	.223	744	n/a

---BY YEAR---

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.003	.009	.015	.019	.030	.047	.074	.113	.146	.247	.614

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances
1990	.060	.047	.050	.611	8575	n/a

n/a - not applicable

* - no data

NOX Summary Statistics for 1990
Edmonton Residential Monitoring Station
Units are PPM (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.001	.004	.008	.014	.031	.067	.120	.192	.252	.397	.806
Spring	.002	.004	.006	.009	.016	.029	.057	.114	.163	.425	.859
Summer	.001	.003	.006	.009	.015	.024	.039	.066	.087	.133	.262
Autumn	.002	.003	.009	.015	.025	.045	.094	.165	.222	.385	.997
SEASON Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev								
Winter	.091	.058	.087	.805	2157					n/a	
Spring	.052	.031	.074	.857	2197					n/a	
Summer	.032	.024	.028	.261	2205					n/a	
Autumn	.074	.047	.081	.995	2170					n/a	
-----BY MONTH-----											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.001	.002	.007	.011	.026	.059	.120	.209	.282	.373	.591
Feb	.002	.004	.008	.013	.030	.065	.114	.174	.221	.536	.806
Mar	.002	.004	.009	.014	.026	.042	.086	.149	.241	.609	.859
Apr	.002	.003	.005	.007	.014	.025	.050	.100	.149	.261	.430
May	.002	.004	.006	.008	.013	.023	.041	.075	.109	.181	.278
Jun	.002	.003	.006	.009	.015	.024	.036	.061	.074	.112	.212
Jul	.001	.003	.006	.009	.014	.022	.037	.060	.080	.129	.202
Aug	.002	.004	.007	.010	.017	.027	.043	.076	.099	.171	.262
Sep	.002	.003	.010	.014	.021	.036	.067	.128	.168	.270	.360
Oct	.002	.003	.010	.016	.027	.048	.091	.163	.235	.397	.997
Nov	.002	.004	.009	.014	.030	.063	.120	.191	.264	.415	.632
Dec	.003	.004	.010	.017	.038	.078	.129	.190	.242	.349	.708
MONTH Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev								
Jan	.090	.053	.089	.590	741					n/a	
Feb	.087	.055	.094	.804	672					n/a	
Mar	.077	.046	.105	.857	736					n/a	
Apr	.044	.027	.054	.428	717					n/a	
May	.035	.024	.038	.276	744					n/a	
Jun	.030	.023	.023	.210	719					n/a	
Jul	.030	.022	.026	.201	744					n/a	
Aug	.037	.027	.033	.260	742					n/a	
Sep	.055	.037	.055	.358	720					n/a	
Oct	.077	.049	.091	.995	743					n/a	
Nov	.091	.057	.089	.630	707					n/a	
Dec	.095	.065	.078	.705	744					n/a	
-----BY YEAR-----											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.001	.003	.007	.011	.019	.036	.077	.140	.196	.366	.997
YEAR Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev								
1990	.062	.038	.075	.996	8729					n/a	

n/a - not applicable

* - no data

NOX Summary Statistics for 1990
Edmonton Industrial Monitoring Station
Units are PPM (parts per million)

No regulations											
--BY SEASON--											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.003	.004	.007	.009	.016	.029	.056	.098	.125	.179	.278
Spring	.000	.003	.007	.010	.016	.026	.045	.076	.106	.165	.304
Summer	.000	.004	.008	.010	.015	.023	.034	.049	.065	.102	.153
Autumn	.005	.006	.009	.012	.019	.031	.057	.100	.134	.232	.349
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.043	.030	.039	.275	2123	n/a					
Spring	.037	.027	.033	.304	2141	n/a					
Summer	.028	.023	.019	.153	2184	n/a					
Autumn	.047	.033	.044	.344	2157	n/a					
--BY MONTH--											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.003	.004	.006	.008	.014	.025	.049	.087	.119	.155	.246
Feb	.003	.004	.006	.009	.014	.028	.056	.093	.129	.198	.278
Mar	.002	.005	.009	.011	.019	.038	.063	.096	.123	.182	.304
Apr	.002	.003	.006	.010	.016	.026	.039	.071	.112	.168	.236
May	.000	.003	.006	.008	.014	.022	.033	.051	.072	.105	.150
Jun	.004	.006	.007	.009	.012	.018	.027	.041	.057	.083	.117
Jul	.001	.003	.009	.011	.015	.022	.032	.049	.065	.102	.153
Aug	.001	.003	.009	.014	.021	.029	.040	.057	.073	.108	.146
Sep	.005	.006	.008	.009	.015	.023	.040	.069	.091	.155	.289
Oct	.007	.010	.013	.015	.021	.035	.065	.111	.169	.279	.349
Nov	.005	.006	.009	.012	.022	.039	.067	.111	.134	.187	.256
Dec	.003	.006	.009	.013	.019	.035	.061	.108	.132	.175	.223
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.038	.026	.036	.243	740	n/a					
Feb	.042	.028	.042	.275	656	n/a					
Mar	.047	.034	.039	.302	733	n/a					
Apr	.036	.026	.034	.234	709	n/a					
May	.027	.021	.021	.150	699	n/a					
Jun	.023	.019	.016	.113	711	n/a					
Jul	.027	.022	.020	.153	744	n/a					
Aug	.033	.028	.020	.145	729	n/a					
Sep	.034	.025	.032	.284	706	n/a					
Oct	.054	.039	.054	.342	734	n/a					
Nov	.052	.038	.041	.251	717	n/a					
Dec	.048	.035	.039	.220	727	n/a					
--BY YEAR--											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.004	.008	.010	.016	.027	.046	.082	.112	.178	.349
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.038	.028	.036	.349	8605	n/a					

n/a - not applicable

* - no data

NOX Summary Statistics for 1990
 Calgary Downtown Monitoring Station
 Units are PPM (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.013	.016	.022	.028	.041	.064	.102	.177	.243	.454	.889
Spring	.008	.013	.019	.022	.031	.045	.067	.094	.122	.278	.462
Summer	.006	.009	.013	.016	.023	.033	.047	.066	.081	.131	.264
Autumn	.002	.009	.016	.020	.031	.047	.078	.124	.162	.305	.587
-----BY MONTH-----											
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.089	.067	.087	.876	2101	n/a					
Spring	.056	.046	.046	.454	2168	n/a					
Summer	.039	.033	.025	.258	2131	n/a					
Autumn	.065	.049	.058	.585	1832	n/a					
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.013	.016	.021	.025	.038	.063	.096	.168	.254	.460	.787
Feb	.014	.015	.021	.028	.040	.063	.099	.165	.206	.391	.702
Mar	.008	.012	.020	.024	.036	.056	.079	.116	.175	.388	.462
Apr	.011	.014	.018	.022	.029	.040	.059	.086	.109	.187	.386
May	.009	.013	.018	.021	.029	.043	.058	.078	.099	.135	.176
Jun	.006	.008	.012	.016	.023	.032	.044	.058	.073	.111	.135
Jul	.006	.009	.013	.016	.022	.034	.048	.065	.081	.119	.160
Aug	.008	.011	.014	.016	.024	.035	.049	.073	.094	.174	.264
Sep	.009	.013	.017	.020	.028	.044	.070	.108	.134	.213	.440
Oct	.002	.004	.014	.019	.032	.049	.080	.145	.198	.344	.587
Nov	.007	.009	.017	.020	.031	.052	.090	.128	.156	.255	.417
Dec	.015	.018	.026	.031	.043	.065	.116	.193	.250	.428	.889
-----BY MONTH-----											
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.087	.064	.090	.774	730	n/a					
Feb	.084	.065	.079	.688	641	n/a					
Mar	.071	.056	.064	.454	728	n/a					
Apr	.050	.042	.035	.375	710	n/a					
May	.047	.042	.025	.168	730	n/a					
Jun	.036	.031	.020	.129	712	n/a					
Jul	.038	.033	.022	.154	693	n/a					
Aug	.042	.035	.031	.256	726	n/a					
Sep	.057	.046	.044	.432	714	n/a					
Oct	.071	.051	.071	.585	729	n/a					
Nov	.067	.052	.053	.410	389	n/a					
Dec	.095	.072	.091	.874	730	n/a					
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.002	.011	.016	.020	.030	.045	.071	.116	.162	.324	.889
-----BY YEAR-----											
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.062	.047	.061	.887	8232	n/a					

n/a - not applicable

* - no data

NOX Summary Statistics for 1990
Calgary Residential Monitoring Station
Units are PPM (parts per million)

No regulations											
-BY SEASON-											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.003	.004	.006	.008	.014	.023	.044	.092	.144	.275	.608
Spring	.003	.004	.006	.007	.009	.015	.023	.037	.053	.141	.404
Summer	.002	.003	.005	.006	.009	.013	.018	.026	.032	.053	.109
Autumn	.001	.003	.006	.009	.013	.021	.035	.061	.090	.182	.288
SEASON Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean		Mean	Std Dev							
Winter	.041		.025	.053	.605	2144			n/a		
Spring	.022		.016	.028	.401	2102			n/a		
Summer	.015		.013	.010	.107	2170			n/a		
Autumn	.031		.022	.033	.287	2145			n/a		
-BY MONTH-											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.003	.004	.007	.009	.014	.026	.052	.124	.182	.347	.608
Feb	.003	.004	.006	.008	.013	.022	.036	.080	.137	.204	.478
Mar	.003	.005	.007	.008	.013	.020	.029	.057	.115	.258	.404
Apr	.003	.004	.005	.006	.009	.013	.021	.033	.045	.070	.260
May	.003	.004	.005	.006	.009	.013	.020	.030	.038	.076	.141
Jun	.002	.003	.004	.005	.007	.010	.016	.025	.031	.047	.061
Jul	.003	.004	.006	.006	.008	.012	.018	.026	.031	.052	.080
Aug	.003	.005	.007	.009	.011	.015	.020	.027	.037	.058	.109
Sep	.007	.008	.009	.010	.013	.018	.028	.040	.050	.068	.114
Oct	.001	.002	.005	.006	.011	.021	.035	.071	.110	.194	.288
Nov	.002	.004	.006	.009	.014	.027	.046	.074	.109	.209	.288
Dec	.003	.004	.006	.008	.013	.022	.042	.072	.117	.174	.268
MONTH Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean		Mean	Std Dev							
Jan	.050		.029	.070	.605	738			n/a		
Feb	.037		.024	.044	.475	669			n/a		
Mar	.032		.021	.044	.401	644			n/a		
Apr	.018		.014	.017	.257	717			n/a		
May	.017		.013	.014	.138	741			n/a		
Jun	.013		.011	.009	.059	717			n/a		
Jul	.015		.012	.009	.077	740			n/a		
Aug	.017		.015	.011	.106	713			n/a		
Sep	.022		.019	.014	.108	717			n/a		
Oct	.033		.021	.038	.287	716			n/a		
Nov	.037		.026	.039	.286	712			n/a		
Dec	.035		.024	.036	.265	737			n/a		
-BY YEAR-											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.001	.004	.006	.007	.010	.017	.028	.052	.080	.183	.608
YEAR Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean		Mean	Std Dev							
1990	.027		.018	.036	.607	8561			n/a		

n/a - not applicable

* - no data

NOX Summary Statistics for 1990
 Calgary Industrial Monitoring Station
 Units are PPM (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.002	.006	.010	.014	.025	.064	.151	.289	.393	.626	.922
Spring	.002	.005	.008	.011	.019	.034	.063	.112	.164	.385	.735
Summer	.002	.003	.007	.009	.016	.027	.047	.074	.096	.166	.393
Autumn	.002	.004	.009	.012	.021	.043	.090	.167	.248	.445	.960

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.115	.062	.135	.920	2143	n/a					
Spring	.053	.035	.070	.733	2194	n/a					
Summer	.036	.027	.033	.391	2195	n/a					
Autumn	.074	.044	.090	.958	2149	n/a					
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.005	.006	.010	.015	.028	.076	.181	.349	.457	.643	.893
Feb	.004	.007	.011	.014	.027	.067	.152	.283	.355	.525	.773
Mar	.004	.006	.010	.014	.021	.043	.084	.183	.277	.521	.735
Apr	.002	.003	.006	.009	.016	.030	.053	.094	.134	.225	.597
May	.004	.006	.009	.011	.019	.032	.053	.084	.108	.146	.224
Jun	.002	.003	.004	.006	.011	.023	.043	.065	.083	.129	.229
Jul	.004	.006	.008	.010	.017	.027	.048	.072	.096	.148	.208
Aug	.004	.006	.009	.011	.018	.030	.051	.082	.110	.187	.393
Sep	.004	.005	.009	.013	.021	.038	.066	.126	.163	.294	.389
Oct	.002	.004	.006	.009	.018	.043	.094	.182	.284	.445	.960
Nov	.003	.008	.012	.015	.024	.052	.105	.193	.292	.491	.659
Dec	.002	.004	.009	.012	.022	.049	.123	.242	.340	.679	.922

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.134	.072	.150	.888	734	n/a					
Feb	.112	.065	.119	.769	669	n/a					
Mar	.078	.046	.100	.731	740	n/a					
Apr	.045	.030	.053	.595	716	n/a					
May	.041	.032	.033	.220	738	n/a					
Jun	.031	.022	.027	.227	714	n/a					
Jul	.037	.028	.030	.204	741	n/a					
Aug	.041	.031	.039	.389	740	n/a					
Sep	.057	.038	.058	.385	717	n/a					
Oct	.078	.041	.105	.958	715	n/a					
Nov	.087	.053	.098	.656	717	n/a					
Dec	.100	.052	.130	.920	740	n/a					
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.002	.004	.008	.011	.019	.037	.077	.161	.254	.492	.960

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.070	.040	.094	.958	8681	n/a					

n/a - not applicable

* - no data

NOX Summary Statistics for 1990
Fort Saskatchewan Monitoring Station
Units are PPM (parts per million)

No regulations											
--BY SEASON--											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.000	.001	.002	.004	.010	.025	.053	.087	.113	.166	.251
Spring	.000	.001	.002	.003	.006	.013	.023	.050	.073	.115	.298
Summer	.000	.002	.005	.006	.008	.012	.017	.027	.035	.053	.126
Autumn	.001	.004	.005	.007	.010	.018	.034	.057	.081	.129	.192
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.037	.021	.037	.251	1940	n/a					
Spring	.021	.012	.024	.298	2122	n/a					
Summer	.015	.012	.011	.126	2035	n/a					
Autumn	.027	.019	.026	.191	1986	n/a					
--BY MONTH--											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.000	.001	.002	.003	.008	.019	.053	.090	.119	.166	.227
Feb	.000	.001	.003	.005	.010	.028	.059	.098	.121	.177	.251
Mar	.000	.002	.003	.005	.009	.019	.036	.073	.102	.131	.298
Apr	.000	.001	.001	.002	.004	.010	.019	.043	.076	.095	.120
May	.000	.002	.003	.005	.007	.012	.018	.030	.042	.057	.070
Jun	.001	.002	.004	.006	.008	.012	.020	.031	.044	.061	.084
Jul	.003	.004	.005	.006	.007	.009	.014	.023	.029	.043	.067
Aug	.000	.001	.005	.006	.010	.013	.019	.027	.032	.050	.126
Sep	.003	.004	.006	.007	.010	.016	.030	.049	.065	.098	.160
Oct	.004	.004	.005	.007	.009	.016	.032	.052	.074	.114	.192
Nov	.001	.002	.005	.007	.010	.025	.045	.074	.100	.151	.183
Dec	.000	.001	.002	.006	.013	.031	.050	.071	.090	.127	.195
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.035	.018	.039	.227	728	n/a					
Feb	.041	.024	.040	.251	672	n/a					
Mar	.030	.018	.032	.298	712	n/a					
Apr	.017	.009	.021	.120	689	n/a					
May	.015	.011	.012	.070	721	n/a					
Jun	.016	.013	.012	.083	563	n/a					
Jul	.012	.010	.008	.064	739	n/a					
Aug	.016	.013	.011	.126	733	n/a					
Sep	.023	.018	.021	.157	687	n/a					
Oct	.025	.018	.024	.188	733	n/a					
Nov	.034	.022	.032	.182	566	n/a					
Dec	.036	.023	.029	.195	540	n/a					
--BY YEAR--											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.000	.001	.003	.005	.008	.015	.030	.058	.082	.133	.298
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.025	.015	.027	.298	8083	n/a					

n/a - not applicable

* - no data

NOX Summary Statistics for 1990
Fort McMurray Monitoring Station
Units are PPM (parts per million)

No regulations											
--BY SEASON--											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.001	.002	.003	.004	.009	.020	.035	.062	.087	.171	.345
Spring	.000	.002	.003	.003	.005	.011	.021	.043	.064	.138	.258
Summer	.000	.000	.002	.003	.005	.011	.018	.028	.037	.059	.106
Autumn	.002	.003	.004	.005	.008	.013	.025	.052	.082	.159	.278
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	.029	.018	.034	.344	2147	n/a					
Spring	.019	.011	.025	.258	2089	n/a					
Summer	.014	.009	.012	.106	1446	n/a					
Autumn	.024	.015	.031	.276	1451	n/a					
--BY MONTH--											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.002	.003	.003	.004	.009	.020	.040	.066	.087	.153	.344
Feb	.002	.002	.003	.004	.008	.016	.030	.053	.090	.182	.345
Mar	.002	.002	.003	.004	.006	.014	.030	.065	.093	.174	.227
Apr	.002	.001	.002	.003	.005	.010	.020	.039	.055	.115	.258
May	.001	.002	.003	.004	.005	.009	.017	.029	.042	.070	.139
Jun	.001	.001	.002	.003	.005	.010	.015	.023	.030	.053	.106
Jul	.000	.002	.002	.003	.005	.012	.021	.034	.043	.060	.074
Aug	*	*	*	*	*	*	*	*	*	*	*
Sep	*	*	*	*	*	*	*	*	*	*	*
Oct	.004	.004	.006	.007	.009	.013	.022	.039	.057	.103	.204
Nov	.002	.003	.004	.005	.007	.014	.028	.070	.111	.205	.278
Dec	.002	.003	.003	.004	.011	.022	.038	.064	.086	.151	.247
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	.030	.018	.036	.343	738	n/a					
Feb	.027	.016	.036	.344	672	n/a					
Mar	.027	.014	.034	.227	630	n/a					
Apr	.017	.010	.024	.258	720	n/a					
May	.014	.010	.015	.138	739	n/a					
Jun	.012	.008	.010	.106	706	n/a					
Jul	.015	.009	.013	.074	740	n/a					
Aug	*	*	*	*	*	*					
Sep	*	*	*	*	*	*					
Oct	.020	.015	.020	.200	731	n/a					
Nov	.028	.015	.039	.276	720	n/a					
Dec	.030	.020	.030	.245	737	n/a					
--BY YEAR--											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.001	.003	.004	.007	.013	.025	.049	.070	.141	.345
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	.022	.013	.028	.345	7133	n/a					

n/a - not applicable

* - no data

Annual Average Concentration									
Year: 1990									
Pollutant: NOX [ppm]									
Year	EDMU	ERMU	EIMU	CDMU	CRMU	CIMU	Fort Sask.	Fort McMurray	Fort Mackay
1976	**	**	**	**	**	**	*	**	*
1977	**	**	**	**	**	**	*	*	*
1978	**	**	**	**	**	**	*	*	*
1979	**	**	**	**	**	**	*	** _a	*
1980	**	**	**	**	**	**	*	b	*
1981	**	**	**	**	**	**	b	**	*
1982	**	**	**	**	**	**	**	**	*
1983	**	**	**	**	**	**	**	**	b
1984	**	**	**	**	**	**	**	** _a	**
1985	**	**	**	**	**	**	**	** _a	**
1986	**	**	**	**	**	**	**	**	**
1987	0.071	0.066	0.032	0.070	0.032	0.076	0.030	0.020	b
1988	0.063	0.055	0.032	0.075	0.032	0.082	0.026	0.019	*
1989	0.061	0.054	0.032	0.067	0.031	0.075	0.020 _a	0.018	*
1990	0.060	0.062	0.038	0.062	0.027	0.070	0.025	0.022	*

a >50% to <75% of data available

b less than 50% data available

** annual average not calculated

* no data available



03 Summary Statistics for 1990
Edmonton Downtown Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .080 PPM
Ambient 24-hour average regulation = .025 PPM

---BY SEASON---

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.001	.001	.002	.007	.014	.021	.024	.030	.036
Spring	.000	.000	.001	.003	.009	.019	.027	.032	.036	.043	.059
Summer	.000	.001	.002	.004	.009	.017	.025	.034	.039	.048	.056
Autumn	.000	.000	.001	.001	.003	.009	.016	.023	.027	.035	.041

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.009	.004	.008	.036	2156	0(0.00X)	0(0.00X)
Spring	.018	.011	.011	.059	2199	0(0.00X)	9(9.78X)
Summer	.018	.013	.012	.056	2201	0(0.00X)	14(15.22X)
Autumn	.010	.005	.009	.041	2172	0(0.00X)	1(1.10X)

---BY MONTH---

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.000	.001	.002	.006	.013	.021	.024	.028	.033
Feb	.000	.000	.001	.001	.004	.009	.016	.022	.026	.032	.036
Mar	.000	.000	.001	.001	.005	.014	.023	.027	.030	.035	.040
Apr	.000	.000	.001	.004	.009	.018	.026	.030	.034	.039	.043
May	.000	.001	.002	.005	.014	.024	.031	.037	.042	.045	.059
Jun	.000	.001	.003	.005	.011	.018	.027	.033	.036	.040	.046
Jul	.000	.001	.002	.004	.009	.019	.027	.036	.041	.050	.055
Aug	.000	.000	.002	.003	.006	.013	.022	.032	.041	.051	.056
Sep	.000	.000	.001	.001	.005	.013	.022	.027	.032	.038	.041
Oct	.000	.000	.000	.001	.002	.008	.015	.021	.025	.032	.035
Nov	.000	.000	.001	.001	.002	.006	.011	.016	.019	.024	.037
Dec	.000	.000	.001	.001	.002	.006	.013	.019	.023	.027	.031

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.008	.003	.008	.033	742	0(0.00X)	0(0.00X)
Feb	.011	.006	.008	.036	670	0(0.00X)	0(0.00X)
Mar	.014	.007	.010	.040	742	0(0.00X)	0(0.00X)
Apr	.018	.011	.010	.043	715	0(0.00X)	0(0.00X)
May	.022	.017	.012	.059	742	0(0.00X)	9(29.03X)
Jun	.019	.015	.010	.046	718	0(0.00X)	6(20.00X)
Jul	.019	.014	.012	.055	744	0(0.00X)	5(16.13X)
Aug	.016	.010	.012	.056	739	0(0.00X)	3(9.68X)
Sep	.014	.008	.010	.041	718	0(0.00X)	1(3.33X)
Oct	.010	.004	.008	.035	738	0(0.00X)	0(0.00X)
Nov	.008	.004	.006	.037	716	0(0.00X)	0(0.00X)
Dec	.008	.005	.007	.031	744	0(0.00X)	0(0.00X)

---BY YEAR---

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.001	.001	.005	.012	.021	.029	.034	.042	.059

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.014	.007	.011	.059	8728	0(0.00X)	24(6.58X)

n/a - not applicable

* - no data

03 Summary Statistics for 1990
Edmonton Residential Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .080 PPM
Ambient 24-hour average regulation = .025 PPM

---BY SEASON---

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.000	.000	.001	.007	.020	.028	.031	.035	.042
Spring	.000	.000	.000	.001	.010	.025	.035	.043	.047	.056	.081
Summer	.000	.000	.001	.003	.011	.021	.033	.044	.049	.060	.075
Autumn	.000	.000	.000	.000	.002	.011	.022	.030	.034	.040	.050

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.011	.001	.011	.042	2158	0(0.00X)	4(4.44X)
Spring	.024	.009	.015	.081	2177	1(0.05X)	40(44.44X)
Summer	.023	.012	.015	.075	2206	0(0.00X)	27(29.35X)
Autumn	.013	.002	.012	.050	2181	0(0.00X)	0(0.00X)

---BY MONTH---

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.000	.000	.001	.006	.018	.026	.030	.034	.036
Feb	.000	.000	.000	.000	.001	.011	.022	.029	.032	.038	.042
Mar	.000	.000	.000	.000	.006	.021	.031	.036	.039	.043	.046
Apr	.000	.000	.000	.002	.012	.024	.034	.040	.043	.046	.051
May	.000	.000	.000	.002	.014	.031	.043	.049	.053	.059	.081
Jun	.000	.000	.002	.005	.014	.024	.035	.042	.047	.051	.075
Jul	.000	.000	.001	.003	.013	.023	.035	.047	.054	.062	.075
Aug	.000	.000	.000	.001	.006	.016	.028	.041	.049	.059	.064
Sep	.000	.000	.000	.000	.003	.016	.029	.035	.038	.044	.050
Oct	.000	.000	.000	.000	.002	.011	.020	.027	.031	.036	.040
Nov	.000	.000	.000	.000	.001	.008	.019	.025	.029	.036	.042
Dec	.000	.000	.000	.000	.001	.005	.018	.029	.031	.034	.037

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.010	.001	.010	.036	742	0(0.00X)	1(3.23X)
Feb	.013	.002	.011	.042	672	0(0.00X)	1(3.57X)
Mar	.019	.005	.014	.046	740	0(0.00X)	7(22.58X)
Apr	.023	.010	.014	.051	693	0(0.00X)	10(35.71X)
May	.029	.013	.017	.081	744	1(0.13X)	23(74.19X)
Jun	.024	.016	.014	.075	719	0(0.00X)	13(43.33X)
Jul	.025	.015	.016	.075	744	0(0.00X)	11(35.48X)
Aug	.019	.007	.015	.064	743	0(0.00X)	3(9.68X)
Sep	.017	.004	.013	.050	720	0(0.00X)	0(0.00X)
Oct	.012	.002	.010	.040	743	0(0.00X)	0(0.00X)
Nov	.011	.001	.010	.042	718	0(0.00X)	0(0.00X)
Dec	.010	.001	.011	.037	744	0(0.00X)	2(6.45X)

---BY YEAR---

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.000	.000	.004	.016	.028	.038	.044	.054	.081

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.018	.004	.015	.081	8722	1(0.01X)	71(19.56X)

n/a - not applicable

* - no data

Wind Summary for 1990.
Edmonton Residential Monitoring Station

** calculation is for exceedances of the 1-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)										>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40				
N	0	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0	0	0	0	0	0
SE	0	1	0	0	0	0	0	0	0	0	0	1
SSE	0	0	0	0	0	0	0	0	0	0	0	0
S	0	0	0	0	0	0	0	0	0	0	0	0
SSW	0	0	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	1	0	0	0	0	0	0	0	0	0	1

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)										>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40				
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	100.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0	.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	.0	100.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0	.0

CALM = .002

MISSING DATA = .002

Wind Summary for 1990
Edmonton Residential Monitoring Station

** calculation is for exceedances of the 24-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)										TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40		
N	39	36	49	30	15	2	0	0	0	171	
NNE	16	11	17	16	2	0	0	0	0	62	
NE	9	12	13	4	0	0	0	0	0	38	
ENE	13	27	16	6	1	0	0	0	0	63	
E	10	24	18	9	0	0	0	0	0	61	
ESE	16	17	17	34	18	6	0	0	0	108	
SE	8	30	30	33	33	7	4	0	0	145	
SSE	25	17	41	49	8	0	0	0	0	140	
S	11	44	31	27	1	0	0	0	0	114	
SSW	16	21	15	2	2	0	0	0	0	56	
SW	20	31	7	1	0	0	0	0	0	59	
WSW	10	15	16	5	0	0	0	0	0	46	
W	15	27	44	10	2	0	0	0	0	98	
WNW	14	37	31	40	12	3	2	3	0	142	
NW	21	29	29	18	14	1	2	0	0	114	
NNW	17	38	33	32	30	21	11	1	0	183	
TOTAL	260	416	407	316	138	40	19	4	0	1600	

CALM = 67 hours

MISSING DATA = 37 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	2.3	2.1	2.9	1.8	.9	.1	.0	.0	.0	10.0	
NNE	.9	.6	1.0	.9	.1	.0	.0	.0	.0	3.6	
NE	.5	.7	.8	.2	.0	.0	.0	.0	.0	2.2	
ENE	.8	1.6	.9	.4	.1	.0	.0	.0	.0	3.7	
E	.6	1.4	1.1	.5	.0	.0	.0	.0	.0	3.6	
ESE	.9	1.0	1.0	2.0	1.1	.4	.0	.0	.0	6.3	
SE	.5	1.8	1.8	1.9	1.9	.4	.2	.0	.0	8.5	
SSE	1.5	1.0	2.4	2.9	.5	.0	.0	.0	.0	8.2	
S	.6	2.6	1.8	1.6	.1	.0	.0	.0	.0	6.7	
SSW	.9	1.2	.9	.1	.1	.0	.0	.0	.0	3.3	
SW	1.2	1.8	.4	.1	.0	.0	.0	.0	.0	3.5	
WSW	.6	.9	.9	.3	.0	.0	.0	.0	.0	2.7	
W	.9	1.6	2.6	.6	.1	.0	.0	.0	.0	5.8	
WNW	.8	2.2	1.8	2.3	.7	.2	.1	.2	.0	8.3	
NW	1.2	1.7	1.7	1.1	.8	.1	.1	.0	.0	6.7	
NNW	1.0	2.2	1.9	1.9	1.8	1.2	.6	.1	.0	10.7	
TOTAL	15.3	24.4	23.9	18.5	8.1	2.3	1.1	.2	.0	93.9	

CALM = 3.93%

MISSING DATA = 2.17%

03 Summary Statistics for 1990
Edmonton Industrial Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .080 PPM
Ambient 24-hour average regulation = .025 PPM

BY SEASON

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.000	.000	.000	.001	.005	.014	.022	.028	.032	.040	.047
Spring	.000	.000	.002	.006	.017	.028	.037	.043	.046	.051	.068
Summer	.000	.000	.003	.006	.014	.024	.034	.044	.050	.060	.082
Autumn	.000	.000	.000	.001	.006	.016	.025	.032	.036	.042	.051

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.015	.006	.010	.047	2065	0(0.00%)	7(8.05%)
Spring	.027	.018	.014	.068	2142	0(0.00%)	46(52.27%)
Summer	.025	.017	.014	.082	2193	2(0.09%)	37(40.22%)
Autumn	.017	.007	.011	.051	2111	0(0.00%)	4(4.60%)

BY MONTH

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.000	.000	.000	.001	.004	.011	.019	.023	.028	.031	.034
Feb	.000	.000	.001	.002	.010	.020	.027	.036	.039	.044	.047
Mar	.000	.000	.001	.003	.014	.027	.036	.041	.045	.051	.056
Apr	.000	.000	.002	.006	.017	.027	.036	.042	.045	.050	.055
May	.000	.001	.005	.009	.020	.031	.039	.045	.048	.052	.068
Jun	.000	.000	.004	.007	.014	.024	.033	.040	.045	.050	.058
Jul	.000	.001	.003	.006	.016	.028	.037	.048	.053	.069	.082
Aug	.000	.000	.002	.005	.012	.020	.032	.043	.051	.059	.062
Sep	.000	.000	.001	.002	.008	.020	.030	.037	.040	.045	.051
Oct	.000	.000	.000	.001	.006	.017	.025	.031	.034	.037	.042
Nov	.000	.000	.000	.001	.005	.013	.023	.027	.029	.035	.041
Dec	.000	.000	.000	.001	.005	.014	.022	.027	.028	.031	.032

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.012	.005	.009	.034	741	0(0.00%)	1(3.23%)
Feb	.019	.010	.012	.047	667	0(0.00%)	4(14.29%)
Mar	.025	.014	.014	.056	742	0(0.00%)	13(41.94%)
Apr	.026	.018	.013	.055	714	0(0.00%)	15(50.00%)
May	.029	.023	.013	.068	686	0(0.00%)	18(66.67%)
Jun	.024	.017	.013	.058	716	0(0.00%)	13(43.33%)
Jul	.027	.020	.016	.082	744	2(0.27%)	16(51.61%)
Aug	.023	.015	.014	.062	733	0(0.00%)	8(25.81%)
Sep	.020	.010	.013	.051	678	0(0.00%)	3(10.71%)
Oct	.016	.006	.011	.042	738	0(0.00%)	0(0.00%)
Nov	.014	.006	.010	.041	695	0(0.00%)	1(3.57%)
Dec	.014	.005	.009	.032	657	0(0.00%)	2(7.14%)

BY YEAR

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.000	.000	.001	.002	.010	.020	.030	.039	.044	.053	.082

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.021	.011	.014	.082	8511	2(0.02%)	94(26.55%)

n/a - not applicable

* - no data

Wind Summary for 1990
Edmonton Industrial Monitoring Station

** calculation is for exceedances of the 1-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0
ESE	0	0	1	0	0	0	0	0	0	0	1
SE	0	0	0	0	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0	0	0	0	0
S	0	1	0	0	0	0	0	0	0	0	1
SSW	0	0	0	0	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	1	1	0	0	0	0	0	0	0	2

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	50.0	.0	.0	.0	.0	.0	.0	.0	50.0
SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	50.0	.0	.0	.0	.0	.0	.0	.0	.0	50.0
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	.0	50.0	50.0	.0	.0	.0	.0	.0	.0	.0	100.0

CALM = .00%

MISSING DATA = .00%

Wind Summary for 1990
Edmonton Industrial Monitoring Station

** calculation is for exceedances of the 24-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	16	35	43	20	19	6	8	0	0	0	147
NNE	24	19	17	5	0	0	0	0	0	0	65
NE	11	30	14	3	1	0	0	0	0	0	59
ENE	8	17	13	9	2	0	0	0	0	0	49
E	7	13	13	9	7	0	0	0	0	0	49
ESE	13	20	34	33	17	2	0	0	0	0	119
SE	13	34	59	51	30	8	4	0	0	0	199
SSE	15	58	64	63	62	34	13	0	0	0	309
S	25	94	115	54	59	21	7	2	0	0	377
SSW	12	78	94	30	16	7	0	0	0	0	237
SW	5	34	33	7	4	2	0	0	0	0	85
WSW	2	13	11	3	1	1	0	0	0	0	31
W	10	11	17	5	5	3	0	0	0	0	51
WNW	12	35	36	18	8	4	2	2	0	0	117
NW	5	27	20	23	23	9	3	0	0	0	110
NNW	8	27	34	29	17	20	15	8	2	160	
TOTAL	186	545	617	362	271	117	52	12	2	2164	

CALM = 4 hours

MISSING DATA = 88 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	.7	1.6	1.9	.9	.8	.3	.4	.0	.0	.0	6.5
NNE	1.1	.8	.8	.2	.0	.0	.0	.0	.0	.0	2.9
NE	.5	1.3	.6	.1	.0	.0	.0	.0	.0	.0	2.6
ENE	.4	.8	.6	.4	.1	.0	.0	.0	.0	.0	2.2
E	.3	.6	.6	.4	.3	.0	.0	.0	.0	.0	2.2
ESE	.6	.9	1.5	1.5	.8	.1	.0	.0	.0	.0	5.3
SE	.6	1.5	2.6	2.3	1.3	.4	.2	.0	.0	.0	8.8
SSE	.7	2.6	2.8	2.8	2.7	1.5	.6	.0	.0	.0	13.7
S	1.1	4.2	5.1	2.4	2.6	.9	.3	.1	.0	.0	16.7
SSW	.5	3.5	4.2	1.3	.7	.3	.0	.0	.0	.0	10.5
SW	.2	1.5	1.5	.3	.2	.1	.0	.0	.0	.0	3.8
WSW	.1	.6	.5	.1	.0	.0	.0	.0	.0	.0	1.4
W	.4	.5	.8	.2	.2	.1	.0	.0	.0	.0	2.3
WNW	.5	1.6	1.6	.8	.4	.2	.1	.1	.0	.0	5.2
NW	.2	1.2	.9	1.0	1.0	.4	.1	.0	.0	.0	4.9
NNW	.4	1.2	1.5	1.3	.8	.9	.7	.4	.1	.1	7.1
TOTAL	8.2	24.2	27.3	16.0	12.0	5.2	2.3	.5	.1	95.9	

CALM = .18%

MISSING DATA = 3.90%

O3 Summary Statistics for 1990
 Calgary Downtown Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .080 PPM
 Ambient 24-hour average regulation = .025 PPM

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.000	.000	.000	.001	.003	.009	.016	.022	.026	.030	.037
Spring	.000	.000	.001	.002	.008	.017	.026	.032	.035	.041	.048
Summer	.000	.000	.001	.003	.008	.016	.026	.035	.040	.051	.079
Autumn	.000	.000	.000	.001	.003	.009	.018	.025	.030	.038	.042

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.010	.004	.008	.037	2142	0(0.00%)	0(0.00%)
Spring	.017	.008	.011	.048	2180	0(0.00%)	7(7.69%)
Summer	.018	.010	.012	.079	2168	0(0.00%)	8(8.89%)
Autumn	.011	.004	.010	.042	2104	0(0.00%)	0(0.00%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.000	.000	.001	.001	.003	.008	.014	.021	.024	.028	.030
Feb	.000	.000	.000	.002	.004	.009	.018	.022	.027	.031	.033
Mar	.000	.000	.000	.001	.006	.014	.023	.029	.032	.036	.043
Apr	.000	.000	.001	.002	.009	.020	.028	.034	.036	.041	.046
May	.000	.000	.000	.002	.008	.017	.026	.033	.036	.043	.048
Jun	.000	.000	.002	.004	.010	.017	.027	.035	.038	.043	.049
Jul	.000	.000	.001	.003	.008	.016	.025	.034	.040	.049	.055
Aug	.000	.000	.001	.002	.006	.014	.026	.035	.041	.060	.079
Sep	.000	.000	.000	.000	.004	.013	.021	.029	.032	.039	.042
Oct	.000	.000	.000	.001	.003	.009	.017	.026	.031	.039	.041
Nov	.000	.000	.000	.001	.002	.006	.014	.020	.025	.034	.039
Dec	.000	.000	.000	.001	.002	.009	.016	.023	.026	.031	.037

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.009	.006	.008	.030	736	0(0.00%)	0(0.00%)
Feb	.011	.005	.008	.033	667	0(0.00%)	0(0.00%)
Mar	.015	.007	.010	.043	737	0(0.00%)	1(3.23%)
Apr	.019	.010	.011	.046	713	0(0.00%)	4(13.33%)
May	.017	.008	.011	.048	730	0(0.00%)	2(6.67%)
Jun	.019	.012	.011	.049	695	0(0.00%)	3(10.71%)
Jul	.018	.010	.012	.055	738	0(0.00%)	2(6.45%)
Aug	.017	.008	.014	.079	735	0(0.00%)	3(9.68%)
Sep	.014	.004	.010	.042	717	0(0.00%)	0(0.00%)
Oct	.011	.004	.010	.041	672	0(0.00%)	0(0.00%)
Nov	.009	.003	.008	.039	715	0(0.00%)	0(0.00%)
Dec	.010	.003	.009	.037	739	0(0.00%)	0(0.00%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.000	.000	.000	.001	.005	.012	.022	.030	.034	.042	.079

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.014	.006	.011	.079	8594	0(0.00%)	15(4.19%)

n/a - not applicable

* - no data

03 Summary Statistics for 1990
 Calgary Residential Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .080 PPM											
Ambient 24-hour average regulation = .025 PPM											
--BY SEASON--											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.000	.000	.000	.001	.008	.020	.028	.034	.037	.040	.044
Spring	.000	.001	.004	.009	.018	.030	.039	.045	.048	.054	.062
Summer	.000	.001	.004	.008	.015	.026	.037	.046	.050	.061	.103
Autumn	.000	.000	.000	.002	.008	.017	.028	.036	.039	.044	.061
SEASON Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Winter	.019	.008	.012	.044	2149			0(0.00%)	20(22.22%)		
Spring	.028	.021	.013	.062	2200			0(0.00%)	65(70.65%)		
Summer	.026	.019	.015	.103	2202			5(0.23%)	50(54.35%)		
Autumn	.018	.008	.012	.061	2177			0(0.00%)	8(8.79%)		
--BY MONTH--											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.000	.000	.000	.001	.005	.016	.025	.031	.034	.036	.040
Feb	.000	.000	.001	.002	.011	.022	.030	.037	.039	.042	.044
Mar	.000	.000	.001	.005	.017	.027	.036	.043	.046	.050	.057
Apr	.000	.001	.006	.010	.018	.032	.039	.046	.049	.053	.060
May	.000	.001	.005	.010	.020	.031	.040	.045	.049	.056	.062
Jun	.000	.001	.007	.012	.018	.028	.039	.046	.050	.055	.065
Jul	.000	.001	.005	.008	.016	.026	.035	.045	.050	.065	.082
Aug	.000	.000	.003	.005	.012	.021	.035	.046	.051	.066	.103
Sep	.000	.000	.001	.004	.009	.019	.032	.039	.042	.047	.061
Oct	.000	.000	.001	.002	.008	.018	.028	.035	.038	.042	.044
Nov	.000	.000	.000	.001	.005	.015	.025	.033	.035	.039	.041
Dec	.000	.000	.000	.001	.010	.021	.029	.033	.036	.040	.044
MONTH Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Jan	.016	.005	.011	.040	739			0(0.00%)	2(6.45%)		
Feb	.021	.013	.012	.044	670			0(0.00%)	9(32.14%)		
Mar	.026	.017	.013	.057	740			0(0.00%)	18(58.06%)		
Apr	.029	.024	.013	.060	718			0(0.00%)	22(73.33%)		
May	.029	.024	.013	.062	742			0(0.00%)	25(80.65%)		
Jun	.029	.023	.013	.065	718			0(0.00%)	21(70.00%)		
Jul	.027	.021	.014	.082	742			1(0.13%)	16(51.61%)		
Aug	.024	.015	.016	.103	742			4(0.54%)	13(41.94%)		
Sep	.021	.012	.013	.061	717			0(0.00%)	3(10.00%)		
Oct	.019	.009	.012	.044	742			0(0.00%)	3(9.68%)		
Nov	.016	.006	.012	.041	718			0(0.00%)	2(6.67%)		
Dec	.019	.008	.012	.044	740			0(0.00%)	9(29.03%)		
--BY YEAR--											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.000	.000	.001	.004	.012	.023	.033	.041	.045	.053	.103
YEAR Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
1990	.023	.013	.014	.103	8728			5(0.06%)	143(39.18%)		

n/a - not applicable

* - no data

Wind Summary for 1990
Calgary Residential Monitoring Station

** calculation is for exceedances of the 1-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	0	0	0	0	0	0	0	0	0	0	
NNE	0	0	0	0	0	0	0	0	0	0	
NE	1	0	0	0	0	0	0	0	0	1	
ENE	1	0	0	0	0	0	0	0	0	1	
E	0	0	0	0	0	0	0	0	0	0	
ESE	0	0	0	0	0	0	0	0	0	0	
SE	1	0	0	0	0	0	0	0	0	1	
SSE	0	0	0	0	0	0	0	0	0	0	
S	1	1	0	0	0	0	0	0	0	2	
SSW	0	0	0	0	0	0	0	0	0	0	
SW	0	0	0	0	0	0	0	0	0	0	
WSW	0	0	0	0	0	0	0	0	0	0	
W	0	0	0	0	0	0	0	0	0	0	
WNW	0	0	0	0	0	0	0	0	0	0	
NW	0	0	0	0	0	0	0	0	0	0	
NNW	0	0	0	0	0	0	0	0	0	0	
TOTAL	4	1	0	0	0	0	0	0	0	5	

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NE	20.0	.0	.0	.0	.0	.0	.0	.0	.0	20.0	
ENE	20.0	.0	.0	.0	.0	.0	.0	.0	.0	20.0	
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
SE	20.0	.0	.0	.0	.0	.0	.0	.0	.0	20.0	
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
S	20.0	20.0	.0	.0	.0	.0	.0	.0	.0	40.0	
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
SW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
W	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
TOTAL	80.0	20.0	.0	.0	.0	.0	.0	.0	.0	100.0	

CALM = .00%

MISSING DATA = .00%

Wind Summary for 1990
Calgary Residential Monitoring Station

** calculation is for exceedances of the 24-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)										>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40				
N	36	63	63	15	9	5	1	0	0	0	0	192
NNE	34	46	31	8	0	0	0	0	0	0	0	119
NE	31	44	9	2	0	0	0	0	0	0	0	86
ENE	24	51	4	0	0	0	0	0	0	0	0	79
E	50	35	17	3	0	0	0	0	0	0	0	105
ESE	38	63	43	4	0	0	0	0	0	0	0	148
SE	40	95	94	17	2	1	0	0	0	0	0	249
SSE	30	66	45	7	1	0	0	0	0	0	0	149
S	20	25	17	10	4	6	0	0	0	0	0	82
SSW	24	13	12	6	8	3	1	0	0	0	1	68
SW	23	29	14	8	3	6	6	5	1	0	1	95
WSW	31	33	67	52	27	14	8	0	0	0	0	232
W	83	290	157	63	21	10	6	0	0	0	0	630
WNW	102	400	125	13	3	2	0	0	0	0	0	645
NW	59	60	86	50	27	9	0	0	0	0	0	291
NNW	41	61	76	42	6	8	3	0	0	0	0	237
TOTAL	666	1374	860	300	111	64	25	5	2	2	3407	

CALM = 1 hours

MISSING DATA = 24 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)										>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40				
N	1.0	1.8	1.8	.4	.3	.1	.0	.0	.0	.0	.0	5.6
NNE	1.0	1.3	.9	.2	.0	.0	.0	.0	.0	.0	.0	3.5
NE	.9	1.3	.3	.1	.0	.0	.0	.0	.0	.0	.0	2.5
ENE	.7	1.5	.1	.0	.0	.0	.0	.0	.0	.0	.0	2.3
E	1.5	1.0	.5	.1	.0	.0	.0	.0	.0	.0	.0	3.1
ESE	1.1	1.8	1.3	.1	.0	.0	.0	.0	.0	.0	.0	4.3
SE	1.2	2.8	2.7	.5	.1	.0	.0	.0	.0	.0	.0	7.3
SSE	.9	1.9	1.3	.2	.0	.0	.0	.0	.0	.0	.0	4.3
S	.6	.7	.5	.3	.1	.2	.0	.0	.0	.0	.0	2.4
SSW	.7	.4	.3	.2	.2	.1	.0	.0	.0	.0	.0	2.0
SW	.7	.8	.4	.2	.1	.2	.2	.1	.0	.0	.0	2.8
WSW	.9	1.0	2.0	1.5	.8	.4	.2	.0	.0	.0	.0	6.8
W	2.4	8.4	4.6	1.8	.6	.3	.2	.0	.0	.0	.0	18.4
WNW	3.0	11.7	3.6	.4	.1	.1	.0	.0	.0	.0	.0	18.8
NW	1.7	1.7	2.5	1.5	.8	.3	.0	.0	.0	.0	.0	8.5
NNW	1.2	1.8	2.2	1.2	.2	.2	.1	.0	.0	.0	.0	6.9
TOTAL	19.4	40.0	25.1	8.7	3.2	1.9	.7	.1	.1	.1	.1	99.3

CALM = .03%

MISSING DATA = .70%

O3 Summary Statistics for 1990
 Calgary Industrial Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .080 PPM
 Ambient 24-hour average regulation = .025 PPM

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.000	.000	.001	.001	.002	.010	.021	.029	.033	.037	.041
Spring	.000	.001	.002	.002	.009	.023	.033	.041	.044	.049	.055
Summer	.000	.001	.001	.003	.010	.021	.031	.038	.043	.051	.075
Autumn	.000	.000	.001	.001	.002	.012	.023	.034	.038	.043	.051

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.012	.007	.011	.040	2149	0(0.00%)	3(3.33%)
Spring	.022	.015	.014	.054	2200	0(0.00%)	30(32.61%)
Summer	.021	.015	.013	.074	2201	0(0.00%)	20(21.74%)
Autumn	.015	.008	.012	.050	2152	0(0.00%)	3(3.37%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.000	.000	.001	.001	.002	.009	.019	.027	.032	.038	.040
Feb	.000	.000	.002	.002	.002	.011	.022	.031	.035	.038	.041
Mar	.000	.000	.002	.002	.004	.020	.031	.037	.042	.046	.051
Apr	.000	.001	.001	.003	.012	.026	.035	.042	.045	.051	.054
May	.000	.001	.002	.003	.010	.024	.034	.041	.044	.048	.055
Jun	.000	.001	.002	.005	.013	.024	.033	.038	.043	.049	.052
Jul	.000	.001	.001	.003	.010	.021	.029	.036	.039	.049	.066
Aug	.000	.001	.001	.002	.007	.017	.030	.040	.044	.057	.075
Sep	.000	.000	.001	.002	.004	.016	.030	.038	.042	.046	.051
Oct	.000	.000	.001	.001	.003	.013	.024	.034	.037	.041	.043
Nov	.000	.000	.001	.001	.002	.008	.018	.026	.030	.034	.041
Dec	.000	.000	.001	.001	.002	.010	.022	.028	.031	.035	.038

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.011	.006	.010	.039	737	0(0.00%)	0(0.00%)
Feb	.014	.008	.011	.040	670	0(0.00%)	1(3.57%)
Mar	.019	.012	.014	.050	742	0(0.00%)	3(9.68%)
Apr	.024	.017	.014	.053	718	0(0.00%)	13(43.33%)
May	.023	.016	.014	.054	740	0(0.00%)	14(45.16%)
Jun	.023	.017	.013	.051	717	0(0.00%)	9(30.00%)
Jul	.020	.014	.012	.065	742	0(0.00%)	4(12.90%)
Aug	.020	.013	.015	.074	742	0(0.00%)	7(22.58%)
Sep	.018	.011	.014	.050	718	0(0.00%)	0(0.00%)
Oct	.015	.008	.012	.042	716	0(0.00%)	3(10.34%)
Nov	.011	.006	.010	.040	718	0(0.00%)	0(0.00%)
Dec	.012	.007	.011	.037	742	0(0.00%)	2(6.45%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.001	.001	.001	.002	.004	.016	.028	.036	.041	.048	.075

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.018	.011	.013	.074	8702	0(0.00%)	56(15.43%)

n/a - not applicable

* - no data

Wind Summary for 1990
Calgary Industrial Monitoring Station

** calculation is for exceedances of the 24-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	9	29	45	42	19	4	3	0	0	0	151
NNE	10	27	25	10	1	0	0	0	0	0	73
NE	11	13	10	1	0	0	0	0	0	0	35
ENE	15	18	9	0	0	0	0	0	0	0	42
E	21	17	4	0	0	0	0	0	0	0	42
ESE	6	6	1	1	1	0	0	0	0	0	15
SE	15	13	4	2	0	0	0	0	0	0	34
SSE	15	21	17	13	3	2	0	0	0	0	71
S	22	21	14	5	2	0	0	0	0	0	64
SSW	22	12	5	2	3	4	0	0	0	0	48
SW	16	11	2	2	2	2	0	1	1	1	37
WSW	16	4	3	2	1	2	0	0	0	0	28
W	35	35	12	11	8	6	2	0	0	0	109
WNW	29	56	47	32	31	5	4	0	0	0	204
NW	14	57	72	23	6	0	0	0	0	0	172
NNW	10	35	75	49	28	16	6	0	0	0	219
TOTAL	266	375	345	195	105	41	15	1	1	1	1344

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	.7	2.2	3.3	3.1	1.4	.3	.2	.0	.0	.0	11.2
NNE	.7	2.0	1.9	.7	.1	.0	.0	.0	.0	.0	5.4
NE	.8	1.0	.7	.1	.0	.0	.0	.0	.0	.0	2.6
ENE	1.1	1.3	.7	.0	.0	.0	.0	.0	.0	.0	3.1
E	1.6	1.3	.3	.0	.0	.0	.0	.0	.0	.0	3.1
ESE	.4	.4	.1	.1	.1	.0	.0	.0	.0	.0	1.1
SE	1.1	1.0	.3	.1	.0	.0	.0	.0	.0	.0	2.5
SSE	1.1	1.6	1.3	1.0	.2	.1	.0	.0	.0	.0	5.3
S	1.6	1.6	1.0	.4	.1	.0	.0	.0	.0	.0	4.8
SSW	1.6	.9	.4	.1	.2	.3	.0	.0	.0	.0	3.6
SW	1.2	.8	.1	.1	.1	.1	.0	.1	.1	.1	2.8
WSW	1.2	.3	.2	.1	.1	.1	.0	.0	.0	.0	2.1
W	2.6	2.6	.9	.8	.6	.4	.1	.0	.0	.0	8.1
WNW	2.2	4.2	3.5	2.4	2.3	.4	.3	.0	.0	.0	15.2
NW	1.0	4.2	5.4	1.7	.4	.0	.0	.0	.0	.0	12.8
NNW	.7	2.6	5.6	3.6	2.1	1.2	.4	.0	.0	.0	16.3
TOTAL	19.8	27.9	25.7	14.5	7.8	3.1	1.1	.1	.1	.1	100.0

CALM = .00%

MISSING DATA = .00%

03 Summary Statistics for 1990
 Fort Saskatchewan Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .080 PPM
 Ambient 24-hour average regulation = .025 PPM

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.000	.000	.000	.000	.004	.019	.031	.037	.040	.047	.052
Spring	.000	.000	.002	.010	.023	.035	.045	.051	.054	.059	.074
Summer	.000	.000	.002	.007	.016	.026	.038	.050	.057	.068	.090
Autumn	.000	.000	.000	.000	.006	.019	.028	.036	.039	.043	.049

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.019	.004	.014	.052	2154	0(0.00%)	20(22.22%)
Spring	.033	.021	.015	.074	2199	0(0.00%)	77(83.70%)
Summer	.028	.018	.016	.090	2199	8(0.36%)	55(59.78%)
Autumn	.018	.006	.013	.049	2144	0(0.00%)	10(11.24%)

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.000	.000	.000	.000	.003	.020	.031	.036	.040	.045	.047
Feb	.000	.000	.000	.000	.007	.024	.034	.040	.045	.049	.052
Mar	.000	.000	.001	.007	.022	.036	.043	.049	.053	.058	.062
Apr	.000	.000	.004	.012	.024	.033	.044	.050	.052	.058	.065
May	.000	.000	.002	.008	.023	.038	.048	.053	.057	.060	.074
Jun	.000	.001	.007	.012	.020	.030	.041	.050	.055	.066	.090
Jul	.000	.000	.004	.008	.017	.028	.039	.051	.056	.064	.084
Aug	.000	.000	.001	.003	.012	.020	.033	.048	.060	.069	.084
Sep	.000	.000	.000	.001	.007	.021	.032	.038	.042	.045	.049
Oct	.000	.000	.000	.001	.008	.019	.026	.034	.038	.041	.044
Nov	.000	.000	.000	.000	.003	.016	.027	.034	.038	.041	.044
Dec	.000	.000	.000	.000	.004	.015	.029	.035	.038	.041	.044

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.019	.004	.014	.047	740	0(0.00%)	8(25.81%)
Feb	.022	.006	.015	.052	672	0(0.00%)	9(32.14%)
Mar	.032	.019	.015	.062	737	0(0.00%)	23(74.19%)
Apr	.033	.023	.014	.065	718	0(0.00%)	25(83.33%)
May	.034	.023	.016	.074	744	0(0.00%)	29(93.55%)
Jun	.031	.024	.015	.090	716	3(0.42%)	22(73.33%)
Jul	.029	.020	.016	.084	743	2(0.27%)	19(61.29%)
Aug	.024	.013	.017	.084	740	3(0.41%)	14(45.16%)
Sep	.020	.007	.014	.049	692	0(0.00%)	3(10.71%)
Oct	.018	.007	.012	.044	738	0(0.00%)	3(9.68%)
Nov	.016	.003	.013	.044	714	0(0.00%)	4(13.33%)
Dec	.017	.004	.013	.044	742	0(0.00%)	3(9.68%)

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.000	.000	.000	.001	.012	.025	.036	.046	.051	.061	.090

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.025	.010	.016	.090	8696	8(0.09%)	162(44.63%)

n/a - not applicable

* - no data

Wind Summary for 1990 -
Fort Saskatchewan Monitoring Station

** calculation is for exceedances of the 1-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	0	0	0	0	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0	0	0	0	0
S	0	3	0	0	0	0	0	0	0	0	3
SSW	0	0	0	0	0	0	0	0	0	0	0
SW	1	1	0	0	0	0	0	0	0	0	2
WSW	0	1	0	0	0	0	0	0	0	0	1
W	0	2	0	0	0	0	0	0	0	0	2
WNW	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0	0
NNW	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1	7	0	0	0	0	0	0	0	0	8

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
S	.0	37.5	.0	.0	.0	.0	.0	.0	.0	.0	37.5
SSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SW	12.5	12.5	.0	.0	.0	.0	.0	.0	.0	.0	25.0
WSW	.0	12.5	.0	.0	.0	.0	.0	.0	.0	.0	12.5
W	.0	25.0	.0	.0	.0	.0	.0	.0	.0	.0	25.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
TOTAL	12.5	87.5	.0	.0	.0	.0	.0	.0	.0	.0	100.0

CALM = .00%

MISSING DATA = .00%

Wind Summary for 1990
Fort Saskatchewan Monitoring Station

** calculation is for exceedances of the 24-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)										TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40		
N	84	60	46	19	2	0	0	0	0	211	
NNE	72	30	9	0	0	0	0	0	0	111	
NE	43	18	4	0	0	0	0	0	0	65	
ENE	23	35	24	4	1	0	0	0	0	87	
E	44	64	36	5	0	0	0	0	0	149	
ESE	55	61	43	28	13	6	2	0	0	208	
SE	48	73	48	30	36	8	1	0	0	244	
SSE	69	50	40	41	16	14	2	0	0	232	
S	92	93	51	23	13	0	0	0	0	272	
SSW	123	69	24	11	7	0	0	0	0	234	
SW	104	109	39	12	0	1	1	0	0	266	
WSW	52	97	42	12	2	1	0	0	0	206	
W	39	78	70	39	5	1	0	0	0	232	
WNW	39	63	79	76	27	12	8	7	3	314	
NW	46	61	79	61	32	25	21	10	6	341	
NNW	61	85	53	50	36	17	11	8	1	322	
TOTAL	994	1046	687	411	190	85	46	25	10	3494	

CALM = 83 hours

MISSING DATA = 311 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

	Wind Speed (km/h)										
Dir	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	TOTAL	
N	2.2	1.5	1.2	.5	.1	.0	.0	.0	.0	5.4	
NNE	1.9	.8	.2	.0	.0	.0	.0	.0	.0	2.9	
NE	1.1	.5	.1	.0	.0	.0	.0	.0	.0	1.7	
ENE	.6	.9	.6	.1	.0	.0	.0	.0	.0	2.2	
E	1.1	1.6	.9	.1	.0	.0	.0	.0	.0	3.8	
ESE	1.4	1.6	1.1	.7	.3	.2	.1	.0	.0	5.3	
SE	1.2	1.9	1.2	.8	.9	.2	.0	.0	.0	6.3	
SSE	1.8	1.3	1.0	1.1	.4	.4	.1	.0	.0	6.0	
S	2.4	2.4	1.3	.6	.3	.0	.0	.0	.0	7.0	
SSW	3.2	1.8	.6	.3	.2	.0	.0	.0	.0	6.0	
SW	2.7	2.8	1.0	.3	.0	.0	.0	.0	.0	6.8	
WSW	1.3	2.5	1.1	.3	.1	.0	.0	.0	.0	5.3	
W	1.0	2.0	1.8	1.0	.1	.0	.0	.0	.0	6.0	
WNW	1.0	1.6	2.0	2.0	.7	.3	.2	.2	.1	8.1	
NW	1.2	1.6	2.0	1.6	.8	.6	.5	.3	.2	8.8	
NNW	1.6	2.2	1.4	1.3	.9	.4	.3	.2	.0	8.3	
TOTAL	25.6	26.9	17.7	10.6	4.9	2.2	1.2	.6	.3	89.9	

CALM = 2.13%

MISSING DATA = 8.00%

03 Summary Statistics for 1990
Fort McMurray Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .080 PPM											
Ambient 24-hour average regulation = .025 PPM											
BY SEASON											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.000	.000	.001	.002	.006	.013	.021	.028	.030	.039	.043
Spring	.001	.002	.008	.013	.025	.043	.060	.068	.071	.078	.089
Summer	.000	.001	.005	.007	.015	.027	.037	.048	.053	.063	.084
Autumn	.000	.001	.001	.003	.008	.019	.027	.032	.035	.042	.052
SEASON Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Winter	.014	.009	.010	.043	2153			0(0.00%)	6(6.67%)		
Spring	.042	.034	.021	.088	2089			16(0.77%)	75(86.21%)		
Summer	.027	.022	.015	.084	2196			2(0.09%)	55(59.78%)		
Autumn	.018	.013	.011	.052	2179			0(0.00%)	14(15.38%)		
BY MONTH											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.000	.001	.001	.002	.005	.011	.020	.026	.028	.030	.030
Feb	.001	.001	.002	.004	.009	.015	.022	.027	.030	.038	.042
Mar	.001	.001	.003	.008	.017	.028	.048	.064	.068	.073	.081
Apr	.002	.005	.014	.021	.030	.046	.062	.067	.071	.081	.089
May	.002	.003	.010	.016	.027	.050	.064	.070	.073	.079	.082
Jun	.001	.003	.008	.012	.021	.031	.044	.051	.055	.063	.070
Jul	.001	.001	.004	.007	.013	.025	.035	.042	.048	.055	.084
Aug	.000	.001	.003	.005	.012	.024	.035	.046	.056	.065	.078
Sep	.001	.001	.002	.003	.007	.018	.031	.037	.040	.044	.052
Oct	.000	.000	.002	.004	.009	.019	.024	.029	.031	.032	.037
Nov	.001	.001	.001	.002	.009	.020	.027	.031	.033	.036	.041
Dec	.000	.000	.001	.002	.006	.013	.021	.029	.035	.040	.043
MONTH Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Jan	.013	.008	.009	.030	742			0(0.00%)	1(3.23%)		
Feb	.016	.012	.009	.041	672			0(0.00%)	2(7.14%)		
Mar	.033	.024	.020	.080	630			1(0.16%)	14(53.85%)		
Apr	.045	.040	.019	.087	720			10(1.39%)	30(100.00%)		
May	.046	.039	.020	.080	739			5(0.68%)	31(100.00%)		
Jun	.032	.028	.015	.069	712			0(0.00%)	27(90.00%)		
Jul	.025	.020	.014	.083	744			2(0.27%)	13(41.94%)		
Aug	.025	.019	.016	.078	740			0(0.00%)	15(48.39%)		
Sep	.019	.014	.013	.051	718			0(0.00%)	4(13.33%)		
Oct	.017	.012	.009	.037	742			0(0.00%)	3(9.68%)		
Nov	.018	.013	.011	.040	719			0(0.00%)	7(23.33%)		
Dec	.015	.008	.010	.043	739			0(0.00%)	3(9.68%)		
BY YEAR											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.000	.001	.002	.004	.011	.022	.034	.053	.063	.073	.089
YEAR Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
1990	.025	.017	.018	.089	8617			18(0.21%)	150(41.67%)		

n/a - not applicable

* - no data

Wind Summary for 1990
Fort McMurray Monitoring Station

** calculation is for exceedances of the 1-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	0	2	1	0	0	0	0	0	0	0	3
NNE	1	1	2	0	0	0	0	0	0	0	4
NE	0	1	0	0	0	0	0	0	0	0	1
ENE	0	0	0	0	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0	0	0	0	0
ESE	0	0	0	0	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0	0	0	0	0
SSE	0	0	1	0	0	0	0	0	0	0	1
S	0	0	3	0	0	0	0	0	0	0	3
SSW	0	1	0	0	0	0	0	0	0	0	1
SW	0	4	0	0	0	0	0	0	0	0	4
WSW	0	0	0	0	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0	0	0	0	0
NNW	1	0	0	0	0	0	0	0	0	0	1
TOTAL	2	9	7	0	0	0	0	0	0	0	18

CALM = 0 hours

MISSING DATA = 0 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									>40	TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40			
N	.0	11.1	5.6	.0	.0	.0	.0	.0	.0	.0	16.7
NNE	5.6	5.6	11.1	.0	.0	.0	.0	.0	.0	.0	22.2
NE	.0	5.6	.0	.0	.0	.0	.0	.0	.0	.0	5.6
ENE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
E	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
ESE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SE	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
SSE	.0	.0	5.6	.0	.0	.0	.0	.0	.0	.0	5.6
S	.0	.0	16.7	.0	.0	.0	.0	.0	.0	.0	16.7
SSW	.0	5.6	.0	.0	.0	.0	.0	.0	.0	.0	5.6
SW	.0	22.2	.0	.0	.0	.0	.0	.0	.0	.0	22.2
WSW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
W	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
WNW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NW	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
NNW	5.6	.0	.0	.0	.0	.0	.0	.0	.0	.0	5.6
TOTAL	11.1	50.0	38.9	.0	.0	.0	.0	.0	.0	.0	100.0

CALM = .00%

MISSING DATA = .00%

Wind Summary for 1990
Fort McMurray Monitoring Station

** calculation is for exceedances of the 24-hour regulation for O3 **

Joint Wind Direction and Speed Frequency Distribution (no. of hours)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	99	116	88	25	19	6	1	0	0	354
NNE	101	135	207	105	28	14	0	0	0	590
NE	39	44	29	1	0	0	0	0	0	113
ENE	40	39	7	1	0	0	0	0	0	87
E	59	25	6	3	0	0	0	0	0	93
ESE	30	15	2	0	0	0	0	0	0	67
SE	94	48	26	3	0	0	0	0	0	171
SSE	172	95	21	5	0	0	0	0	0	293
S	161	50	30	5	0	0	0	0	0	246
SSW	38	15	5	0	0	0	0	0	0	58
SW	25	11	0	0	0	0	0	0	0	36
WSW	67	77	22	1	0	0	0	0	0	167
W	99	64	75	30	5	0	0	0	0	273
WNW	66	35	37	30	23	26	2	2	0	221
NW	61	29	37	37	26	16	6	0	0	212
NNW	49	40	23	30	12	2	0	0	0	156
TOTAL	1220	838	615	276	113	64	9	2	0	3137

CALM = 432 hours

MISSING DATA = 31 hours

Joint Wind Direction and Speed Frequency Distribution (percent)

Dir	Wind Speed (km/h)									TOTAL
	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	>40	
N	2.8	3.2	2.4	.7	.5	.2	.0	.0	.0	9.8
NNE	2.8	3.8	5.8	2.9	.8	.4	.0	.0	.0	16.4
NE	1.1	1.2	.8	.0	.0	.0	.0	.0	.0	3.1
ENE	1.1	1.1	.2	.0	.0	.0	.0	.0	.0	2.4
E	1.6	.7	.2	.1	.0	.0	.0	.0	.0	2.6
ESE	1.4	.4	.1	.0	.0	.0	.0	.0	.0	1.9
SE	2.6	1.3	.7	.1	.0	.0	.0	.0	.0	4.8
SSE	4.8	2.6	.6	.1	.0	.0	.0	.0	.0	8.1
S	4.5	1.4	.8	.1	.0	.0	.0	.0	.0	6.8
SSW	1.1	.4	.1	.0	.0	.0	.0	.0	.0	1.6
SW	.7	.3	.0	.0	.0	.0	.0	.0	.0	1.0
WSW	1.9	2.1	.6	.0	.0	.0	.0	.0	.0	4.6
W	2.8	1.8	2.1	.8	.1	.0	.0	.0	.0	7.6
WNW	1.8	1.0	1.0	.8	.6	.7	.1	.1	.0	6.1
NW	1.7	.8	1.0	1.0	.7	.4	.2	.0	.0	5.9
NNW	1.4	1.1	.6	.8	.3	.1	.0	.0	.0	4.3
TOTAL	33.9	23.3	17.1	7.7	3.1	1.8	.3	.1	.0	87.1

CALM = 12.00%

MISSING DATA = .86%

Annual Average Concentration								
Year: 1990								
Pollutant: O3 [ppm]								
Year	EDMU	ERMU	ETMU	CDMU	CRMU	CIMU	Fort Sask.	Fort McMurray
1976	0.024	0.027	0.022	0.012	0.027	0.019	*	*
1977	0.014	0.015	0.015	0.011	0.021	0.013	*	*
1978	0.009	0.017	0.017	0.014	0.022	0.012	*	*
1979	0.012	0.019	0.023	0.013	0.024	0.018	*	0.020
1980	0.012	0.015	0.020	0.012	0.020	0.014	*	0.020
1981	0.012	0.018	0.021	0.010	0.020	0.012	b	0.020
1982	0.014	0.021	0.024	0.012	0.022	0.016	0.027	0.020
1983	0.012	0.018	0.022	0.012	0.021	0.015	0.022	0.020
1984	0.015	0.017	0.020	0.013	0.023	0.015	0.027	0.020
1985	0.015	0.015	0.025	0.013	0.023	0.017	0.024	0.020
1986	0.016	0.018	0.022	0.012	0.022	0.017	0.021	0.020
1987	0.021	0.019	0.022	0.014	0.023	0.017	0.024	0.022
1988	0.016	0.018	0.022	0.016	0.023	0.017	0.025	0.022
1989	0.015	0.016	0.020	0.015	0.024	0.016	0.021	0.023
1990	0.014	0.018	0.021	0.014	0.023	0.018	0.025	0.025

a >50% to <75% of data available

b less than 50% of data available

* no data available

SO₂ Summary Statistics for 1990
Edmonton Industrial Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .170 PPM
Ambient 24-hour average regulation = .060 PPM
Ambient annual average regulation = .010 PPM

BY SEASON

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.000	.001	.002	.003	.005	.006	.008	.011	.031
Spring	.000	.000	.000	.000	.000	.001	.003	.005	.006	.012	.056
Summer	.000	.000	.000	.000	.000	.002	.003	.005	.007	.015	.036
Autumn	.000	.000	.000	.001	.003	.004	.006	.007	.009	.015	.047

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.003	.002	.002	.031	2128	0(0.00X)	0(0.00X)
Spring	.002	.000	.003	.056	2140	0(0.00X)	0(0.00X)
Summer	.002	.000	.003	.036	1932	0(0.00X)	0(0.00X)
Autumn	.005	.003	.003	.047	2162	0(0.00X)	0(0.00X)

BY MONTH

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.001	.001	.002	.003	.004	.006	.007	.011	.016
Feb	.000	.000	.001	.001	.002	.003	.004	.006	.007	.010	.012
Mar	.000	.000	.000	.000	.001	.002	.003	.005	.007	.011	.030
Apr	.000	.000	.000	.000	.000	.001	.002	.004	.005	.011	.021
May	.000	.000	.000	.000	.000	.001	.002	.004	.005	.015	.056
Jun	.000	.000	.000	.001	.002	.003	.004	.006	.008	.015	.022
Jul	.000	.000	.000	.000	.000	.001	.002	.004	.006	.012	.020
Aug	.000	.000	.000	.000	.000	.001	.003	.005	.007	.015	.036
Sep	.002	.002	.003	.003	.004	.005	.006	.008	.009	.017	.047
Oct	.000	.000	.002	.003	.004	.005	.006	.009	.011	.015	.022
Nov	.000	.000	.000	.000	.001	.002	.004	.005	.007	.010	.022
Dec	.000	.000	.000	.001	.002	.003	.005	.007	.009	.012	.031

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.003	.002	.002	.016	738	0(0.00X)	0(0.00X)
Feb	.003	.002	.002	.012	666	0(0.00X)	0(0.00X)
Mar	.003	.001	.003	.030	742	0(0.00X)	0(0.00X)
Apr	.002	.000	.002	.021	713	0(0.00X)	0(0.00X)
May	.002	.000	.003	.056	685	0(0.00X)	0(0.00X)
Jun	.003	.002	.003	.022	457	0(0.00X)	0(0.00X)
Jul	.002	.000	.002	.020	744	0(0.00X)	0(0.00X)
Aug	.002	.000	.003	.036	731	0(0.00X)	0(0.00X)
Sep	.005	.003	.003	.045	712	0(0.00X)	0(0.00X)
Oct	.005	.004	.003	.022	735	0(0.00X)	0(0.00X)
Nov	.003	.001	.002	.022	715	0(0.00X)	0(0.00X)
Dec	.004	.002	.003	.031	724	0(0.00X)	0(0.00X)

BY YEAR

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.000	.000	.001	.002	.004	.006	.008	.013	.056

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.003	.001	.003	.056	8362	0(0.00X)	0(0.00X)

n/a - not applicable

* - no data

S02 Summary Statistics for 1990
 Calgary Industrial Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .170 PPM
 Ambient 24-hour average regulation = .060 PPM
 Ambient annual average regulation = .010 PPM

--BY SEASON--											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.000	.000	.002	.003	.006	.008	.010	.014	.041
Spring	.000	.000	.000	.001	.002	.003	.004	.006	.008	.012	.021
Summer	.000	.000	.000	.000	.001	.002	.003	.005	.006	.010	.016
Autumn	.000	.000	.000	.000	.001	.002	.004	.006	.008	.011	.033

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.004	.002	.003	.041	1774	0(0.00X)	0(0.00X)
Spring	.003	.002	.002	.021	2190	0(0.00X)	0(0.00X)
Summer	.002	.001	.002	.016	2089	0(0.00X)	0(0.00X)
Autumn	.003	.001	.003	.033	2150	0(0.00X)	0(0.00X)

--BY MONTH--											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.000	.000	.001	.002	.005	.007	.008	.010	.015
Feb	.000	.000	.001	.001	.002	.004	.007	.009	.012	.017	.041
Mar	.000	.001	.002	.002	.003	.004	.005	.007	.009	.013	.021
Apr	.000	.000	.001	.001	.002	.003	.004	.007	.008	.012	.019
May	.000	.000	.000	.000	.001	.002	.003	.004	.005	.008	.014
Jun	.000	.000	.000	.000	.001	.002	.003	.004	.005	.007	.011
Jul	.000	.000	.000	.001	.001	.002	.003	.005	.006	.010	.016
Aug	.000	.000	.000	.000	.001	.002	.003	.005	.006	.010	.013
Sep	.000	.000	.000	.000	.001	.002	.004	.007	.008	.011	.033
Oct	.000	.000	.000	.000	.000	.001	.003	.005	.006	.012	.022
Nov	.000	.000	.000	.001	.001	.002	.004	.006	.007	.010	.023
Dec	.000	.000	.000	.000	.002	.003	.005	.007	.009	.013	.015

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.003	.001	.003	.015	464	0(0.00X)	0(0.00X)
Feb	.005	.003	.004	.041	669	0(0.00X)	0(0.00X)
Mar	.004	.004	.003	.021	740	0(0.00X)	0(0.00X)
Apr	.004	.003	.002	.019	716	0(0.00X)	0(0.00X)
May	.002	.001	.002	.014	734	0(0.00X)	0(0.00X)
Jun	.002	.001	.002	.011	605	0(0.00X)	0(0.00X)
Jul	.002	.001	.002	.016	742	0(0.00X)	0(0.00X)
Aug	.002	.000	.002	.013	742	0(0.00X)	0(0.00X)
Sep	.003	.001	.003	.033	718	0(0.00X)	0(0.00X)
Oct	.002	.000	.003	.022	715	0(0.00X)	0(0.00X)
Nov	.003	.001	.002	.023	717	0(0.00X)	0(0.00X)
Dec	.004	.001	.003	.015	641	0(0.00X)	0(0.00X)

--BY YEAR--											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.000	.000	.001	.002	.004	.006	.008	.012	.041

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.003	.001	.003	.041	8203	0(0.00X)	0(0.00X)

n/a - not applicable

* - no data

SO2 Summary Statistics for 1990
 Fort Saskatchewan Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .170 PPM
 Ambient 24-hour average regulation = .060 PPM
 Ambient annual average regulation = .010 PPM

--BY SEASON--

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.000	.001	.002	.003	.004	.006	.007	.013	.023
Spring	.000	.000	.000	.000	.000	.001	.002	.003	.004	.011	.031
Summer	.000	.000	.000	.000	.001	.002	.003	.003	.005	.008	.016
Autumn	.000	.000	.000	.000	.001	.003	.004	.007	.008	.013	.027

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.003	.002	.003	.023	2145	0(0.00X)	0(0.00X)
Spring	.001	.000	.002	.031	2197	0(0.00X)	0(0.00X)
Summer	.002	.001	.002	.016	2196	0(0.00X)	0(0.00X)
Autumn	.003	.001	.003	.027	2151	0(0.00X)	0(0.00X)

--BY MONTH--

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.001	.001	.002	.003	.004	.005	.007	.012	.018
Feb	.000	.000	.000	.001	.002	.003	.005	.007	.008	.016	.023
Mar	.000	.000	.000	.000	.001	.001	.003	.004	.006	.014	.031
Apr	.000	.000	.000	.000	.000	.001	.002	.003	.004	.009	.026
May	.000	.000	.000	.000	.000	.001	.001	.002	.002	.008	.014
Jun	.000	.000	.000	.000	.000	.002	.002	.003	.004	.006	.011
Jul	.000	.000	.000	.001	.001	.002	.003	.004	.005	.008	.015
Aug	.000	.000	.000	.000	.000	.001	.002	.003	.004	.009	.016
Sep	.000	.000	.000	.000	.000	.000	.001	.002	.004	.011	.023
Oct	.000	.001	.001	.002	.002	.003	.004	.006	.008	.014	.023
Nov	.000	.000	.000	.001	.002	.004	.006	.008	.009	.012	.027
Dec	.000	.000	.000	.001	.002	.003	.004	.006	.007	.010	.019

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.003	.002	.002	.018	736	0(0.00X)	0(0.00X)
Feb	.003	.002	.003	.023	672	0(0.00X)	0(0.00X)
Mar	.002	.001	.003	.031	736	0(0.00X)	0(0.00X)
Apr	.001	.000	.002	.026	717	0(0.00X)	0(0.00X)
May	.001	.000	.001	.014	744	0(0.00X)	0(0.00X)
Jun	.002	.000	.001	.011	714	0(0.00X)	0(0.00X)
Jul	.002	.001	.002	.015	742	0(0.00X)	0(0.00X)
Aug	.002	.000	.002	.016	740	0(0.00X)	0(0.00X)
Sep	.001	.000	.002	.023	692	0(0.00X)	0(0.00X)
Oct	.004	.003	.003	.023	739	0(0.00X)	0(0.00X)
Nov	.004	.002	.003	.027	720	0(0.00X)	0(0.00X)
Dec	.003	.002	.002	.019	737	0(0.00X)	0(0.00X)

--BY YEAR--

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.000	.000	.001	.002	.003	.005	.007	.012	.031

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.002	.001	.003	.031	8689	0(0.00X)	0(0.00X)

n/a - not applicable

* - no data

SO₂ Summary Statistics for 1990
 Fort McMurray Monitoring Station
 Units are PPM (parts per million)

Ambient 1-hour average regulation = .170 PPM
 Ambient 24-hour average regulation = .060 PPM
 Ambient annual average regulation = .010 PPM

BY SEASON											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	.000	.000	.001	.002	.002	.003	.004	.012	.020	.043	.088
Spring	.000	.000	.000	.000	.001	.001	.002	.009	.017	.037	.105
Summer	.000	.000	.000	.000	.000	.000	.001	.004	.010	.025	.088
Autumn	.000	.000	.000	.000	.000	.001	.002	.007	.014	.035	.095

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Winter	.005	.003	.008	.088	2153	0(0.00%)	0(0.00%)
Spring	.004	.001	.008	.105	2092	0(0.00%)	0(0.00%)
Summer	.002	.000	.005	.088	2191	0(0.00%)	0(0.00%)
Autumn	.003	.000	.007	.095	2178	0(0.00%)	0(0.00%)

BY MONTH											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	.001	.002	.002	.002	.002	.003	.005	.010	.017	.033	.076
Feb	.001	.001	.002	.002	.002	.003	.005	.015	.022	.049	.085
Mar	.001	.001	.001	.001	.001	.002	.003	.010	.019	.039	.073
Apr	.000	.000	.000	.001	.001	.001	.002	.007	.014	.031	.045
May	.000	.000	.000	.000	.000	.001	.002	.010	.018	.042	.105
Jun	.000	.000	.000	.000	.000	.000	.000	.001	.005	.012	.026
Jul	.000	.000	.000	.000	.000	.000	.001	.006	.012	.025	.064
Aug	.000	.000	.000	.000	.000	.000	.001	.004	.013	.035	.088
Sep	.000	.000	.000	.000	.000	.000	.001	.003	.007	.020	.037
Oct	.000	.000	.000	.000	.000	.001	.002	.003	.006	.036	.095
Nov	.000	.000	.001	.001	.001	.003	.005	.015	.023	.043	.083
Dec	.000	.000	.001	.001	.002	.002	.004	.010	.021	.044	.088

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
Jan	.005	.004	.007	.075	744	0(0.00%)	0(0.00%)
Feb	.006	.004	.009	.084	672	0(0.00%)	0(0.00%)
Mar	.004	.002	.008	.072	633	0(0.00%)	0(0.00%)
Apr	.003	.001	.006	.045	720	0(0.00%)	0(0.00%)
May	.004	.000	.009	.105	739	0(0.00%)	0(0.00%)
Jun	.001	.000	.002	.026	711	0(0.00%)	0(0.00%)
Jul	.002	.000	.005	.064	743	0(0.00%)	0(0.00%)
Aug	.002	.000	.007	.088	737	0(0.00%)	0(0.00%)
Sep	.002	.000	.004	.037	714	0(0.00%)	0(0.00%)
Oct	.002	.000	.007	.095	744	0(0.00%)	0(0.00%)
Nov	.006	.003	.009	.083	720	0(0.00%)	0(0.00%)
Dec	.003	.002	.009	.088	737	0(0.00%)	0(0.00%)

BY YEAR											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.000	.000	.000	.000	.000	.001	.003	.008	.015	.036	.105

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances	
						1 hour	24 hour
1990	.003	.000	.007	.105	8614	0(0.00%)	0(0.00%)

n/a - not applicable

* - no data

SO₂ Summary Statistics for 1990
Fort MacKay Monitoring Station
Units are PPM (parts per million)

Ambient 1-hour average regulation = .170 PPM											
Ambient 24-hour average regulation = .060 PPM											
Ambient annual average regulation = .010 PPM											
BY SEASON											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	.000	.000	.000	.000	.001	.001	.003	.009	.013	.036	.097
Spring	.000	.000	.000	.000	.000	.001	.002	.005	.014	.053	.136
Summer	.000	.000	.000	.000	.000	.001	.001	.003	.008	.033	.115
Autumn	.000	.000	.000	.000	.000	.001	.002	.004	.009	.047	.109
SEASON Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Winter	.004	.001	.007	.097	2154			0(0.00X)	0(0.00X)		
Spring	.003	.000	.010	.136	2197			0(0.00X)	0(0.00X)		
Summer	.002	.000	.006	.115	2191			0(0.00X)	0(0.00X)		
Autumn	.003	.000	.008	.109	2149			0(0.00X)	0(0.00X)		
BY MONTH											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	.000	.000	.000	.000	.001	.001	.003	.007	.011	.025	.064
Feb	.000	.000	.000	.001	.001	.002	.005	.012	.019	.049	.069
Mar	.000	.000	.000	.000	.001	.001	.003	.012	.027	.074	.121
Apr	.000	.000	.000	.000	.001	.001	.002	.003	.010	.053	.136
May	.000	.000	.000	.000	.000	.000	.001	.003	.005	.015	.031
Jun	.000	.000	.000	.000	.000	.001	.001	.003	.005	.016	.040
Jul	.000	.000	.000	.000	.000	.001	.001	.002	.006	.023	.035
Aug	.000	.000	.000	.000	.000	.000	.001	.004	.012	.047	.115
Sep	.000	.000	.000	.000	.000	.001	.001	.006	.011	.033	.057
Oct	.000	.000	.000	.000	.000	.000	.001	.003	.008	.050	.109
Nov	.000	.000	.000	.000	.000	.001	.002	.004	.007	.050	.083
Dec	.000	.000	.000	.000	.001	.001	.003	.007	.014	.029	.097
MONTH Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
Jan	.003	.001	.006	.064	741			0(0.00X)	0(0.00X)		
Feb	.005	.001	.009	.069	672			0(0.00X)	0(0.00X)		
Mar	.005	.000	.013	.121	739			0(0.00X)	0(0.00X)		
Apr	.003	.000	.011	.136	716			0(0.00X)	0(0.00X)		
May	.001	.000	.003	.031	742			0(0.00X)	0(0.00X)		
Jun	.001	.000	.003	.040	718			0(0.00X)	0(0.00X)		
Jul	.002	.000	.004	.035	736			0(0.00X)	0(0.00X)		
Aug	.003	.000	.009	.115	737			0(0.00X)	0(0.00X)		
Sep	.002	.000	.006	.057	716			0(0.00X)	0(0.00X)		
Oct	.003	.000	.010	.109	713			0(0.00X)	0(0.00X)		
Nov	.003	.000	.009	.083	720			0(0.00X)	0(0.00X)		
Dec	.003	.001	.007	.097	741			0(0.00X)	0(0.00X)		
BY YEAR											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.000	.000	.000	.000	.000	.001	.002	.006	.012	.043	.136
YEAR Arithmetic Geometric Arithmetic Range N Number of Exceedances											
	Mean	Mean	Std Dev					1 hour	24 hour		
1990	.003	.000	.008	.136	8691			0(0.00X)	0(0.00X)		

n/a - not applicable

* - no data

Annual Average Concentration									
Year: 1990									
Pollutant: SO2 [ppm]									
Year	EDMU	ERMU	EIMU	CDMU	CRMU	CIMU	Fort Sask.	Fort McMurray	Fort Mackay
1976**	0.00	0.00	0.00	0.00	0.00	0.00	*	*	*
1977**	0.00	0.00	0.00	0.00	0.00	0.00	*	*	*
1978**	0.00	0.00	0.00	0.00	0.00	0.00	*	*	*
1979**	0.00	0.00	0.00	0.00	0.00	0.00	*	0.00	*
1980**	0.00	0.00	0.00	0.00	0.00	0.00	*	0.00	*
1981**	b	b	0.00	*	*	0.00	b	0.00	*
1982**	*	*	0.00	*	*	0.00	0.00	0.00	*
1983**	*	*	0.00	*	*	0.00	0.00	0.00	b
1984**	*	*	0.00	*	*	0.00	0.00	0.00	0.00
1985**	*	*	0.00	*	*	0.00	0.00	0.00	0.00
1986**	*	*	0.00	*	*	0.00	0.00	0.00	0.00
1987	*	*	0.002	*	*	0.004	0.002	0.003	0.004
1988	*	*	0.003	*	*	0.005	0.002	0.002	0.003
1989	*	*	0.003	*	*	0.003	0.002a	0.004	0.003
1990	*	*	0.003	*	*	0.003	0.002	0.003	0.003

a >50% to <75% of data available

b less than 50% of data available

* no data available

** Data from 1976 to 1986 calculated only to two decimal places. Actual annual average concentration is between 0.00 and 0.01 ppm.

THC Summary Statistics for 1990
Edmonton Downtown Monitoring Station
Units are PPM (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	1.2	1.5	1.7	1.7	1.9	2.1	2.3	2.5	2.7	3.2	4.8
Spring	1.2	1.6	1.7	1.7	1.8	1.9	2.2	2.4	2.6	3.1	4.7
Summer	1.0	1.1	1.2	1.3	1.5	1.7	1.9	2.5	2.6	2.8	3.4
Autumn	1.0	1.5	1.6	1.6	1.9	2.3	2.5	2.7	2.9	3.3	5.9

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	2.12	2.10	.35	3.6	2140	n/a					
Spring	2.03	2.01	.32	3.5	2173	n/a					
Summer	1.78	1.74	.41	2.4	2204	n/a					
Autumn	2.24	2.20	.43	4.9	2164	n/a					
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	1.8	1.8	1.9	2.0	2.1	2.2	2.4	2.6	2.8	3.4	4.8
Feb	1.8	1.8	1.9	1.9	2.0	2.2	2.3	2.6	2.8	3.3	4.8
Mar	1.6	1.7	1.8	1.8	1.9	2.0	2.3	2.6	2.8	3.8	4.7
Apr	1.2	1.6	1.7	1.8	1.9	2.0	2.3	2.4	2.6	2.9	3.5
May	1.4	1.5	1.7	1.7	1.8	1.8	2.0	2.1	2.2	2.5	2.9
Jun	1.4	1.5	1.5	1.5	1.6	1.7	1.8	1.9	2.0	2.4	2.7
Jul	1.0	1.1	1.2	1.3	1.4	1.5	1.7	1.8	1.9	2.1	2.6
Aug	1.1	1.1	1.2	1.3	1.5	2.3	2.5	2.6	2.8	3.0	3.4
Sep	2.2	2.2	2.2	2.3	2.4	2.5	2.6	2.8	2.9	3.3	5.1
Oct	1.0	1.2	2.1	2.1	2.2	2.3	2.5	2.8	2.9	3.3	4.3
Nov	1.3	1.4	1.5	1.6	1.6	1.7	1.9	2.2	2.3	2.9	5.9
Dec	1.2	1.4	1.6	1.6	1.7	1.8	2.0	2.1	2.2	2.5	4.3

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	2.27	2.25	.34	3.0	744	n/a					
Feb	2.23	2.21	.31	3.0	652	n/a					
Mar	2.12	2.09	.39	3.1	709	n/a					
Apr	2.08	2.06	.28	2.3	720	n/a					
May	1.89	1.88	.19	1.5	744	n/a					
Jun	1.74	1.73	.18	1.3	720	n/a					
Jul	1.55	1.54	.21	1.6	744	n/a					
Aug	2.05	1.97	.55	2.3	740	n/a					
Sep	2.51	2.50	.24	2.9	719	n/a					
Oct	2.38	2.36	.33	3.3	725	n/a					
Nov	1.83	1.80	.34	4.6	720	n/a					
Dec	1.87	1.86	.23	3.1	744	n/a					
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	1.0	1.2	1.5	1.6	1.8	2.0	2.3	2.5	2.7	3.1	5.9

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	2.04	2.00	.41	4.9	8681	n/a					

n/a - not applicable

* - no data

THC Summary Statistics for 1990
Edmonton Residential Monitoring Station
Units are PPM (parts per million)

units are ppm (parts per million)

No regulations											
BY SEASON											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	1.0	1.9	1.9	2.0	2.1	2.3	2.6	2.9	3.1	4.0	7.1
Spring	.5	1.7	1.7	1.7	1.8	2.0	2.2	2.6	2.9	4.0	5.9
Summer	1.3	1.7	1.8	1.8	1.9	2.0	2.1	2.3	2.5	2.9	5.4
Autumn	1.8	1.8	1.9	1.9	2.0	2.1	2.4	2.7	2.9	3.4	5.5
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	2.40	2.37	.44	6.1	2160	n/a					
Spring	2.11	2.07	.48	5.4	2151	n/a					
Summer	2.06	2.04	.27	4.1	2207	n/a					
Autumn	2.20	2.17	.36	3.7	2174	n/a					
BY MONTH											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	1.0	1.9	1.9	2.0	2.1	2.3	2.6	3.0	3.4	4.0	7.1
Feb	1.8	1.9	1.9	2.0	2.1	2.3	2.6	2.9	3.1	4.3	5.6
Mar	1.8	1.8	1.9	1.9	2.0	2.1	2.4	2.9	3.4	5.3	5.9
Apr	1.7	1.7	1.8	1.8	1.8	1.9	2.1	2.5	2.8	3.6	4.6
May	.5	1.6	1.7	1.7	1.7	1.8	2.0	2.4	2.5	3.0	5.1
Jun	1.7	1.7	1.8	1.8	1.8	1.9	2.0	2.1	2.3	2.6	3.2
Jul	1.3	1.7	1.8	1.8	1.9	2.0	2.2	2.3	2.5	2.9	5.4
Aug	1.8	1.8	1.9	1.9	2.0	2.0	2.2	2.5	2.7	3.0	4.0
Sep	1.8	1.8	1.9	1.9	1.9	2.0	2.3	2.6	2.8	3.2	3.9
Oct	1.8	1.8	1.8	1.9	1.9	2.0	2.3	2.6	2.9	3.4	5.5
Nov	1.8	1.8	1.9	1.9	2.0	2.2	2.5	2.8	3.0	3.4	4.2
Dec	1.7	1.8	1.9	2.0	2.1	2.3	2.5	2.8	2.9	3.3	4.4
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	2.45	2.41	.51	6.1	744	n/a					
Feb	2.42	2.38	.45	3.8	672	n/a					
Mar	2.33	2.27	.60	4.1	744	n/a					
Apr	2.06	2.04	.37	2.9	694	n/a					
May	1.93	1.91	.32	4.6	713	n/a					
Jun	1.93	1.92	.17	1.5	719	n/a					
Jul	2.10	2.08	.30	4.1	744	n/a					
Aug	2.14	2.13	.26	2.2	744	n/a					
Sep	2.15	2.13	.32	2.1	720	n/a					
Oct	2.16	2.13	.37	3.7	743	n/a					
Nov	2.29	2.27	.37	2.4	711	n/a					
Dec	2.33	2.31	.32	2.7	744	n/a					
BY YEAR											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	.5	1.7	1.8	1.8	1.9	2.1	2.3	2.7	2.9	3.7	7.1
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	2.19	2.16	.42	6.6	8692	n/a					

n/a - not applicable

* - no data

THC Summary Statistics for 1990
Edmonton Industrial Monitoring Station
Units are PPM (parts per million)

Units are μm (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	1.0	1.0	1.0	1.0	1.2	1.4	1.8	2.4	2.7	4.3	9.4
Spring	1.0	1.0	1.0	1.0	1.1	1.2	1.4	1.8	2.2	4.8	10.7
Summer	1.0	1.0	1.2	1.2	1.3	1.5	1.8	2.1	2.6	4.7	12.0
Autumn	1.0	1.0	1.1	1.2	1.3	1.4	1.8	2.5	3.0	5.0	13.5
-----BY MONTH-----											
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	1.60	1.50	.71	8.4	2128	n/a					
Spring	1.40	1.32	.73	9.7	2144	n/a					
Summer	1.67	1.59	.71	11.0	2094	n/a					
Autumn	1.68	1.57	.82	12.5	1935	n/a					
-----BY MONTH-----											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	1.0	1.0	1.0	1.0	1.1	1.3	1.5	1.9	2.1	3.9	5.5
Feb	1.0	1.0	1.0	1.0	1.1	1.2	1.4	1.6	1.9	3.2	5.5
Mar	1.0	1.0	1.0	1.0	1.1	1.2	1.4	1.7	2.2	4.8	9.5
Apr	1.0	1.0	1.0	1.0	1.0	1.1	1.3	1.7	2.3	4.3	9.1
May	1.0	1.0	1.0	1.0	1.1	1.3	1.5	1.9	2.1	4.5	10.7
Jun	1.0	1.1	1.1	1.2	1.3	1.5	1.8	2.1	2.4	3.4	7.7
Jul	1.1	1.2	1.2	1.3	1.4	1.6	1.9	2.4	3.3	5.0	6.9
Aug	1.0	1.0	1.1	1.2	1.3	1.4	1.6	1.9	2.4	4.7	12.0
Sep	1.0	1.1	1.1	1.2	1.3	1.4	1.6	1.8	2.1	4.1	13.5
Oct	1.0	1.0	1.1	1.1	1.2	1.3	1.5	2.0	2.9	6.1	8.5
Nov	1.0	1.0	1.1	1.2	1.5	1.9	2.3	2.9	3.5	5.1	5.8
Dec	1.1	1.1	1.3	1.3	1.5	2.0	2.4	2.8	3.1	5.8	9.4
-----BY MONTH-----											
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	1.41	1.34	.53	4.5	730	n/a					
Feb	1.31	1.27	.42	4.5	670	n/a					
Mar	1.40	1.32	.67	8.5	728	n/a					
Apr	1.34	1.25	.70	8.1	711	n/a					
May	1.47	1.38	.80	9.7	705	n/a					
Jun	1.62	1.57	.52	6.7	691	n/a					
Jul	1.80	1.71	.74	5.8	693	n/a					
Aug	1.59	1.50	.82	11.0	710	n/a					
Sep	1.53	1.47	.67	12.5	719	n/a					
Oct	1.54	1.43	.88	7.5	620	n/a					
Nov	2.02	1.89	.82	4.8	596	n/a					
Dec	2.06	1.95	.85	8.3	728	n/a					
-----BY YEAR-----											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	1.0	1.0	1.0	1.1	1.2	1.4	1.7	2.2	2.7	4.7	13.5
-----BY YEAR-----											
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	1.59	1.49	.75	12.5	8301	n/a					

n/a - not applicable

* - no data

THC Summary Statistics for 1990
 Calgary Downtown Monitoring Station
 Units are PPM (parts per million)

No regulations

---BY SEASON---

SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	1.6	1.7	1.8	1.8	2.0	2.1	2.3	2.6	2.9	3.9	5.6
Spring	1.6	1.7	1.8	1.8	1.9	2.1	2.2	2.4	2.5	3.1	3.9
Summer	1.5	1.6	1.7	1.7	1.8	1.9	2.0	2.1	2.2	2.5	3.2
Autumn	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.4	2.5	3.0	4.0

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances
Winter	2.20	2.17	.40	4.0	1937	n/a
Spring	2.10	2.08	.25	2.3	2182	n/a
Summer	1.90	1.89	.20	3.7	2194	n/a
Autumn	2.05	2.04	.27	2.5	2171	n/a

---BY MONTH---

MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	1.7	1.7	1.8	1.9	2.0	2.2	2.4	2.8	3.1	3.9	4.5
Feb	1.7	1.7	1.8	1.9	2.0	2.1	2.3	2.5	2.7	3.8	4.7
Mar	1.6	1.7	1.8	1.8	1.9	2.1	2.2	2.4	2.7	3.3	3.9
Apr	1.7	1.7	1.8	1.8	1.9	2.0	2.2	2.3	2.5	2.8	3.4
May	1.7	1.8	1.8	1.8	1.9	2.0	2.2	2.4	2.5	2.7	3.2
Jun	1.6	1.6	1.7	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4
Jul	1.6	1.7	1.7	1.7	1.8	1.9	2.0	2.1	2.2	2.4	2.5
Aug	1.5	1.6	1.6	1.7	1.7	1.8	1.9	2.1	2.3	2.7	5.2
Sep	1.7	1.7	1.8	1.9	1.9	2.0	2.2	2.4	2.4	2.8	3.7
Oct	1.5	1.6	1.6	1.7	1.8	1.9	2.1	2.3	2.5	3.1	4.0
Nov	1.6	1.6	1.7	1.8	1.9	2.0	2.2	2.4	2.5	2.9	3.4
Dec	1.6	1.6	1.7	1.8	1.9	2.0	2.2	2.5	2.7	3.6	5.6

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances
Jan	2.30	2.27	.42	2.8	615	n/a
Feb	2.20	2.18	.36	3.0	581	n/a
Mar	2.13	2.11	.30	2.3	740	n/a
Apr	2.08	2.07	.21	1.7	716	n/a
May	2.08	2.06	.23	1.5	726	n/a
Jun	1.89	1.88	.15	.8	716	n/a
Jul	1.93	1.92	.16	.9	740	n/a
Aug	1.87	1.85	.26	3.7	738	n/a
Sep	2.07	2.06	.22	2.0	719	n/a
Oct	2.00	1.98	.31	2.5	734	n/a
Nov	2.08	2.07	.25	1.8	718	n/a
Dec	2.12	2.09	.40	4.0	741	n/a

---BY YEAR---

YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.4	2.6	3.2	5.6

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances
1990	2.06	2.04	.31	4.1	8484	n/a

n/a - not applicable

* - no data

THC Summary Statistics for 1990
 Calgary Residential Monitoring Station
 Units are PPM (parts per million)

No regulations											
-BY SEASON-											
SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	1.6	1.7	1.7	1.8	1.9	2.0	2.2	2.4	2.5	3.1	5.4
Spring	1.6	1.6	1.7	1.7	1.8	1.9	2.1	2.3	2.4	2.9	4.1
Summer	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2.0	2.1	2.2	6.5
Autumn	1.7	1.8	1.9	1.9	2.0	2.0	2.1	2.3	2.4	2.6	3.2
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	2.08	2.06	.29	3.8	2139	n/a					
Spring	1.97	1.96	.26	2.5	2151	n/a					
Summer	1.86	1.86	.17	4.9	2180	n/a					
Autumn	2.07	2.07	.16	1.5	2175	n/a					
-BY MONTH-											
MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	1.6	1.6	1.7	1.8	1.9	2.0	2.2	2.4	2.7	3.4	4.5
Feb	1.6	1.7	1.7	1.8	1.8	2.0	2.2	2.3	2.4	2.9	5.4
Mar	1.6	1.7	1.8	1.9	2.0	2.2	2.3	2.4	2.7	3.2	4.1
Apr	1.7	1.7	1.8	1.8	1.9	1.9	2.0	2.1	2.2	2.3	3.1
May	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2.0	2.2	2.5
Jun	1.6	1.7	1.7	1.7	1.8	1.8	1.9	2.0	2.0	2.1	2.3
Jul	1.6	1.7	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.1	2.3
Aug	1.6	1.6	1.7	1.7	1.8	1.9	2.0	2.1	2.1	2.4	6.5
Sep	1.7	1.7	1.9	1.9	2.0	2.0	2.1	2.2	2.2	2.4	2.6
Oct	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.3	2.4	2.7	3.1
Nov	1.8	1.9	1.9	1.9	2.0	2.1	2.2	2.3	2.4	2.9	3.2
Dec	1.8	1.8	1.9	1.9	2.0	2.1	2.2	2.4	2.5	2.7	3.1
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	2.08	2.05	.36	2.9	723	n/a					
Feb	2.03	2.01	.28	3.8	672	n/a					
Mar	2.17	2.16	.30	2.5	744	n/a					
Apr	1.95	1.95	.14	1.4	663	n/a					
May	1.79	1.79	.11	.9	744	n/a					
Jun	1.85	1.85	.09	.7	707	n/a					
Jul	1.84	1.84	.08	.7	744	n/a					
Aug	1.90	1.89	.26	4.9	729	n/a					
Sep	2.03	2.02	.12	.9	711	n/a					
Oct	2.06	2.05	.17	1.3	744	n/a					
Nov	2.13	2.12	.18	1.4	720	n/a					
Dec	2.12	2.11	.19	1.3	744	n/a					
-BY YEAR-											
YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	1.6	1.7	1.7	1.8	1.8	2.0	2.1	2.3	2.4	2.8	6.5
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	2.00	1.98	.24	4.9	8645	n/a					

n/a - not applicable

* - no data

THC Summary Statistics for 1990
Calgary Industrial Monitoring Station
Units are PPM (parts per million)

No regulations

---BY SEASON---

SEASON	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Winter	1.6	1.7	1.8	1.8	1.9	2.1	2.3	2.7	2.9	3.5	4.8
Spring	1.6	1.6	1.6	1.7	1.8	1.9	2.0	2.2	2.4	3.0	4.8
Summer	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2.1	2.3	4.9
Autumn	1.6	1.8	1.8	1.8	1.9	2.0	2.1	2.4	2.7	3.2	5.2

SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances
Winter	2.17	2.14	.39	3.2	2155	n/a
Spring	1.92	1.90	.28	3.2	2208	n/a
Summer	1.79	1.78	.17	3.4	2208	n/a
Autumn	2.07	2.06	.30	3.6	2158	n/a

---BY MONTH---

MONTH	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
Jan	1.7	1.7	1.8	1.8	1.9	2.0	2.3	2.7	3.0	3.6	4.8
Feb	1.7	1.8	1.8	1.8	1.9	2.1	2.3	2.7	2.9	3.3	4.0
Mar	1.7	1.7	1.8	1.8	1.9	2.0	2.1	2.4	2.7	3.6	4.8
Apr	1.6	1.6	1.6	1.6	1.7	1.8	1.9	2.0	2.2	2.6	3.1
May	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2.1	2.2	2.5	4.1
Jun	1.6	1.6	1.6	1.6	1.7	1.7	1.8	1.9	2.0	2.1	2.3
Jul	1.5	1.6	1.6	1.7	1.7	1.7	1.8	1.9	2.0	2.2	3.9
Aug	1.6	1.6	1.6	1.7	1.7	1.8	1.9	2.0	2.2	2.5	4.9
Sep	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.3	2.4	2.7	3.2
Oct	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.4	2.7	3.3	5.2
Nov	1.7	1.8	1.8	1.8	1.9	2.0	2.2	2.5	2.7	3.4	4.1
Dec	1.6	1.7	1.8	1.8	1.9	2.1	2.3	2.7	2.9	3.7	4.6

MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances
Jan	2.16	2.13	.41	3.1	739	n/a
Feb	2.17	2.14	.34	2.3	672	n/a
Mar	2.07	2.05	.35	3.1	744	n/a
Apr	1.80	1.79	.19	1.5	720	n/a
May	1.87	1.86	.18	2.5	744	n/a
Jun	1.76	1.76	.12	.7	720	n/a
Jul	1.77	1.76	.15	2.4	744	n/a
Aug	1.83	1.82	.22	3.3	744	n/a
Sep	2.02	2.01	.20	1.4	720	n/a
Oct	2.08	2.06	.34	3.6	718	n/a
Nov	2.12	2.10	.32	2.4	720	n/a
Dec	2.17	2.14	.39	3.0	744	n/a

---BY YEAR---

YEAR	MIN	1%	5%	10%	25%	50%	75%	90%	95%	99%	MAX
1990	1.5	1.6	1.7	1.7	1.8	1.9	2.1	2.3	2.6	3.2	5.2

YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances
1990	1.98	1.96	.33	3.7	8729	n/a

n/a - not applicable

* - no data

THC Summary Statistics for 1990
 Fort Saskatchewan Monitoring Station
 Units are PPM (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	1.4	1.5	1.7	1.7	1.9	2.1	2.3	2.6	2.9	3.6	6.8
Spring	1.0	1.4	1.5	1.6	1.6	1.7	1.9	2.2	2.5	3.3	5.8
Summer	1.0	1.4	1.6	1.7	1.8	1.9	2.1	2.2	2.3	2.7	5.2
Autumn	.7	1.5	1.6	1.7	1.8	1.9	2.1	2.4	2.6	3.2	4.1
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	2.15	2.11	.42	5.4	2155	n/a					
Spring	1.84	1.81	.37	4.8	2091	n/a					
Summer	1.94	1.93	.26	4.2	2157	n/a					
Autumn	2.00	1.98	.33	3.4	2089	n/a					
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	1.4	1.5	1.6	1.7	1.9	2.0	2.2	2.6	2.9	3.6	4.2
Feb	1.4	1.5	1.6	1.7	1.8	1.9	2.2	2.6	2.9	3.4	4.7
Mar	1.0	1.4	1.5	1.5	1.7	1.8	2.0	2.5	2.8	3.6	4.9
Apr	1.4	1.4	1.5	1.6	1.6	1.7	1.8	2.0	2.2	3.3	5.8
May	1.5	1.5	1.6	1.6	1.6	1.7	1.9	2.1	2.2	2.5	3.2
Jun	1.0	1.2	1.5	1.6	1.7	1.9	2.1	2.3	2.3	2.8	5.2
Jul	1.6	1.7	1.7	1.7	1.8	1.9	2.0	2.3	2.4	2.6	3.2
Aug	1.6	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.7	3.5
Sep	.7	1.7	1.7	1.8	1.9	2.0	2.1	2.3	2.4	3.0	4.0
Oct	1.4	1.4	1.5	1.6	1.7	1.8	1.9	2.1	2.2	2.6	3.4
Nov	1.5	1.6	1.7	1.8	1.9	2.1	2.4	2.6	2.9	3.5	4.1
Dec	1.5	1.6	1.8	1.9	2.0	2.2	2.4	2.7	3.0	3.4	6.8
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	2.11	2.07	.42	2.8	739	n/a					
Feb	2.06	2.02	.41	3.3	672	n/a					
Mar	1.95	1.91	.44	3.9	713	n/a					
Apr	1.78	1.76	.37	4.4	639	n/a					
May	1.78	1.77	.22	1.7	739	n/a					
Jun	1.90	1.87	.34	4.2	671	n/a					
Jul	1.94	1.93	.22	1.6	743	n/a					
Aug	1.98	1.97	.22	1.9	743	n/a					
Sep	2.00	1.99	.24	3.3	694	n/a					
Oct	1.82	1.81	.24	2.0	710	n/a					
Nov	2.18	2.15	.38	2.6	685	n/a					
Dec	2.27	2.24	.41	5.5	744	n/a					
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	.7	1.5	1.6	1.6	1.8	1.9	2.1	2.4	2.6	3.3	6.8
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	1.98	1.96	.37	6.1	8492	n/a					

n/a - not applicable

* - no data

THC Summary Statistics for 1990
Fort McMurray Monitoring Station
Units are PPM (parts per million)

units are ppm (parts per million)

No regulations											
--BY SEASON--											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	1.1	1.2	1.2	1.3	1.5	1.7	1.8	2.0	2.1	2.5	2.9
Spring	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.7	1.9	2.2	3.5
Summer	1.0	1.3	1.4	1.4	1.5	1.6	1.7	1.9	2.0	2.1	2.7
Autumn	1.3	1.4	1.5	1.5	1.6	1.7	1.8	1.9	2.0	2.4	3.2
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	1.69	1.67	.28	1.8	1464	n/a					
Spring	1.56	1.55	.18	2.2	2026	n/a					
Summer	1.63	1.62	.19	1.7	1430	n/a					
Autumn	1.72	1.71	.20	1.9	2033	n/a					
--BY MONTH--											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.5	1.7	2.3	2.4
Feb	1.3	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.1	2.5	2.9
Mar	1.3	1.3	1.4	1.4	1.5	1.6	1.7	1.9	2.0	2.2	2.9
Apr	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.6	1.7	1.8	3.4
May	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.7	1.8	2.2	3.5
Jun	1.0	1.0	1.3	1.4	1.4	1.5	1.6	1.8	1.9	2.1	2.7
Jul	1.4	1.4	1.5	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.3
Aug	1.1	1.3	1.4	1.5	1.5	1.6	1.8	1.9	2.0	2.2	2.4
Sep	1.3	1.4	1.5	1.5	1.6	1.7	1.7	1.8	1.9	2.0	2.2
Oct	1.4	1.5	1.5	1.6	1.6	1.7	1.8	1.9	2.0	2.1	2.4
Nov	1.3	1.3	1.4	1.5	1.6	1.7	1.8	2.1	2.3	2.6	3.2
Dec	1.2	1.2	1.4	1.4	1.6	1.7	1.9	2.1	2.2	2.5	2.8
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	1.30	1.28	.20	1.3	165	n/a					
Feb	1.73	1.72	.21	1.6	577	n/a					
Mar	1.63	1.62	.20	1.6	637	n/a					
Apr	1.51	1.51	.14	2.1	719	n/a					
May	1.55	1.54	.18	2.2	670	n/a					
Jun	1.52	1.51	.18	1.7	465	n/a					
Jul	1.71	1.70	.16	.9	407	n/a					
Aug	1.65	1.64	.18	1.3	558	n/a					
Sep	1.66	1.66	.14	.9	572	n/a					
Oct	1.73	1.73	.14	1.0	744	n/a					
Nov	1.75	1.73	.27	1.9	717	n/a					
Dec	1.75	1.73	.27	1.6	722	n/a					
--BY YEAR--											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	1.0	1.2	1.4	1.4	1.5	1.6	1.8	1.9	2.0	2.4	3.5
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	1.65	1.63	.22	2.5	6953	n/a					

n/a - not applicable

* - no data

THC Summary Statistics for 1990
Fort MacKay Monitoring Station
Units are PPM (parts per million)

No regulations											
-----BY SEASON-----											
SEASON	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Winter	1.2	1.3	1.3	1.4	1.6	1.8	2.0	2.2	2.4	2.7	3.8
Spring	1.6	1.6	1.7	1.7	1.8	2.0	2.2	2.5	2.7	3.1	4.1
Summer	1.0	1.3	1.4	1.5	1.6	1.7	2.0	2.2	2.3	2.5	3.9
Autumn	1.1	1.3	1.4	1.6	1.7	1.8	1.8	2.0	2.1	2.3	2.7
SEASON	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Winter	1.81	1.79	.32	2.6	2160	n/a					
Spring	2.06	2.04	.32	2.5	1775	n/a					
Summer	1.81	1.79	.28	2.9	1687	n/a					
Autumn	1.76	1.75	.18	1.6	2006	n/a					
-----BY MONTH-----											
MONTH	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
Jan	1.6	1.7	1.7	1.7	1.8	1.9	2.1	2.3	2.5	2.9	3.3
Feb	1.7	1.7	1.7	1.8	1.8	1.9	2.1	2.3	2.4	2.7	3.1
Mar	1.7	1.7	1.7	1.7	1.7	1.8	2.1	2.4	2.6	3.0	3.3
Apr	1.7	1.7	1.8	1.9	1.9	2.1	2.4	2.7	2.9	3.4	4.1
May	1.6	1.6	1.7	1.7	1.8	2.0	2.1	2.3	2.4	2.5	2.8
Jun	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.4	2.4	2.4	2.5
Jul	1.3	1.3	1.4	1.4	1.5	1.7	1.9	2.1	2.2	2.5	2.7
Aug	1.0	1.6	1.6	1.6	1.7	1.7	1.8	2.0	2.2	2.5	3.9
Sep	1.6	1.6	1.6	1.6	1.7	1.8	1.8	2.0	2.1	2.3	2.5
Oct	1.1	1.6	1.6	1.7	1.7	1.7	1.8	1.9	1.9	2.1	2.7
Nov	1.3	1.3	1.3	1.4	1.5	1.8	1.9	2.1	2.1	2.3	2.7
Dec	1.2	1.3	1.3	1.3	1.4	1.5	1.6	1.8	1.9	2.0	3.8
MONTH	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
Jan	1.97	1.96	.28	1.7	744	n/a					
Feb	1.95	1.94	.22	1.4	672	n/a					
Mar	1.96	1.94	.30	1.6	568	n/a					
Apr	2.21	2.18	.36	2.4	625	n/a					
May	2.00	1.99	.21	1.2	582	n/a					
Jun	2.19	2.19	.11	.5	212	n/a					
Jul	1.71	1.69	.28	1.4	735	n/a					
Aug	1.79	1.78	.20	2.9	740	n/a					
Sep	1.79	1.78	.14	.9	717	n/a					
Oct	1.75	1.75	.10	1.6	689	n/a					
Nov	1.74	1.72	.27	1.4	600	n/a					
Dec	1.52	1.51	.20	2.6	744	n/a					
-----BY YEAR-----											
YEAR	MIN	1X	5X	10X	25X	50X	75X	90X	95X	99X	MAX
1990	1.0	1.3	1.4	1.5	1.7	1.8	2.0	2.2	2.4	2.8	4.1
YEAR	Arithmetic Mean	Geometric Mean	Arithmetic Std Dev	Range	N	Number of Exceedances					
1990	1.85	1.83	.30	3.1	7628	n/a					

n/a - not applicable

* - no data

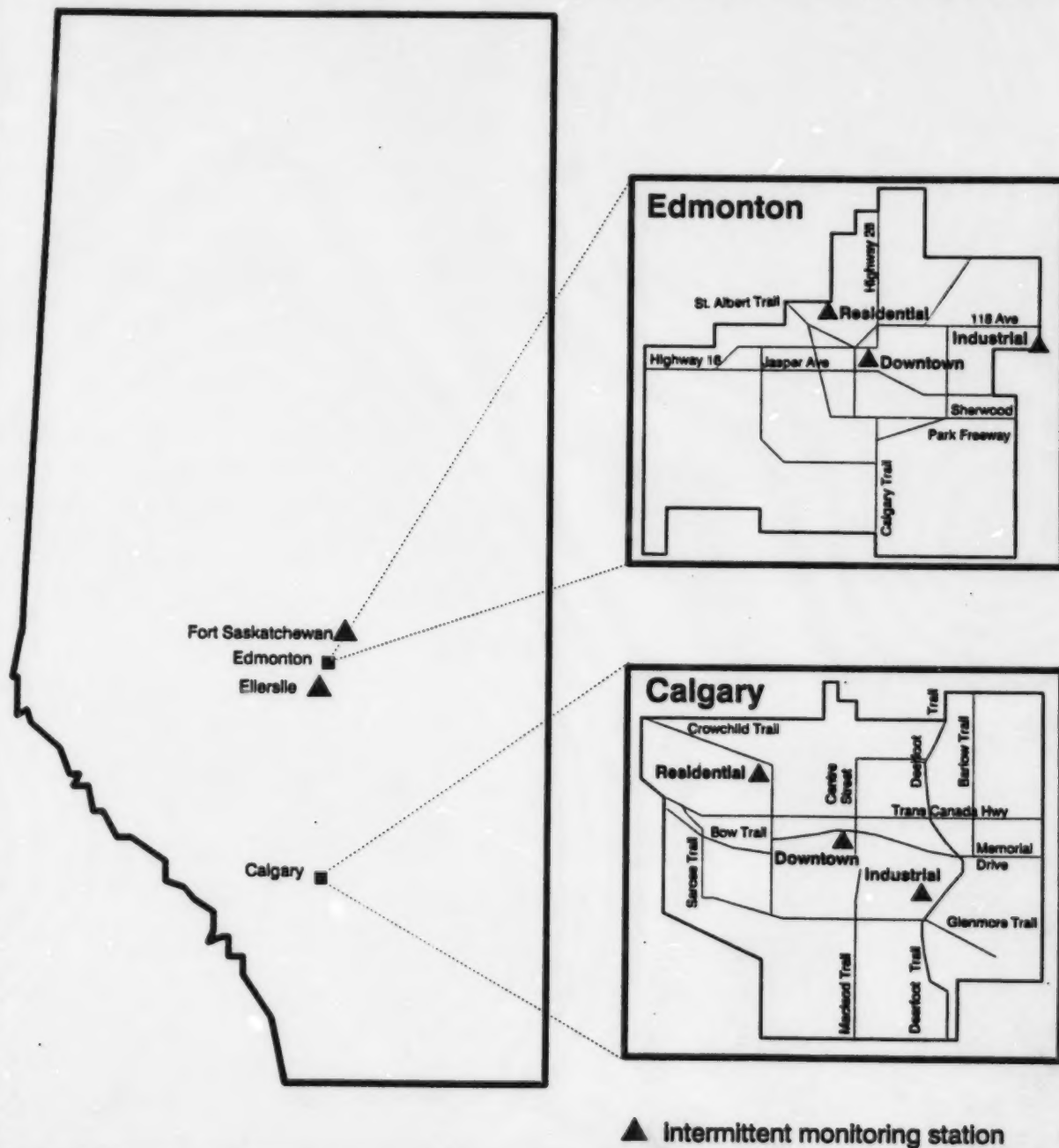
Annual Average Concentration									
Year: 1990									
Pollutant: THC (ppm)									
Year	EDMU	ERMU	EIMU	CDMU	CRMU	CIMU	Fort Sask.	Fort McMurray	Fort Mackay
1976	2.0	2.4	2.4	2.2	1.6	2.0	*	*	*
1977	2.0	2.1	2.6	2.4	2.0	2.0	*	*	*
1978	2.2	2.4	3.6	2.4	2.0	2.1	*	*	*
1979	1.8	2.6	2.5	2.9	2.1	2.0	*	*	*
1980	2.1	2.5	2.5	2.2	1.8	2.2	*	*	*
1981	2.2	2.5	2.8	2.1	1.8	2.3	b	b	*
1982	2.3	2.3	2.5	2.1	1.8	2.0	1.6	1.6a	*
1983	2.3	2.3	3.8	2.2	2.0	2.2	1.4	b	*
1984	2.4	2.2	3.7	2.2	1.9	2.2	1.5	1.9a	*
1985	2.9	2.1	2.0	2.1	1.9	2.1	1.3	1.7	*
1986	2.4	2.2	2.2	2.2	2.0	2.2	2.0	2.0	b
1987	2.5	2.1	1.8	2.3	2.0	2.0	2.1	1.9	1.9
1988	2.2	2.2	1.9	2.1	2.0	2.1	2.3	1.8	1.8
1989	2.1	2.2	1.8	2.2	2.0	2.1	1.8a	2.3	1.9
1990	2.0	2.2	1.6	2.1	2.0	2.0	2.0	1.6	1.9

a >50% to <75% of data available

b less than 50% of data available

* no data available

LOCATION OF INTERMITTENT AIR QUALITY MONITORING STATIONS



Location of Intermittent Monitoring Stations

Station Name	Station Location
Edmonton Downtown Monitoring Unit (EDMU)	10255 - 104 St.
Edmonton Residential Monitoring Unit (ERMU)	13335 - 127 St.
Edmonton Industrial Monitoring Unit (EIMU)	105 Ave. and 17 St.
Calgary Downtown Monitoring Unit (CDMU)	611 - 4 St. S.W.
Calgary Residential Monitoring Unit (CRMU)	39 St. and 29 Ave. N.W.
Calgary Industrial Monitoring Unit (CIMU)	49 Ave. and 15 St. S.E.
Fort Saskatchewan Monitoring Unit (EMMU)	100 Ave. and 98 St.
Ellerslie	

Pollutant Name : SUSPENDED PARTICULATES									Percentage of Readings > Standard
Ambient 24 Hr. Regulation = 100 µg/m3									
EDMU		MIN	25 %	50 %	MEAN	75 %	90 %	PEAK	24 hr
1990	Jan	37.3	*	*	45.8	*	*	76.8	0.0
	Feb	17.5	*	*	43.2	*	*	173.1	20.0
	Mar	32.3	*	*	83.4	*	*	179.9	20.0
	Apr	50.9	*	*	84.6	*	*	188.4	20.0
	May	62.9	*	*	79.6	*	*	117.1	20.0
	Jun	52.0	*	*	68.4	*	*	109.1	20.0
	Jul	28.3	*	*	51.0	*	*	77.7	0.0
	Aug	44.2	*	*	54.5	*	*	67.7	0.0
	Sep	35.2	*	*	53.6	*	*	78.0	0.0
	Oct	20.4	*	*	46.1	*	*	143.4	20.0
	Nov	49.2	*	*	72.8	*	*	117.8	20.0
	Dec	62.7	*	*	75.8	*	*	88.2	0.0
ERMU		MIN	25 %	50 %	MEAN	75 %	90 %	PEAK	24 hr
1990	Jan	22.0	*	*	37.1	*	*	65.5	0.0
	Feb	17.0	*	*	33.7	*	*	38.2	0.0
	Mar	27.9	*	*	65.2	*	*	139.3	20.0
	Apr	26.8	*	*	53.3	*	*	92.3	0.0
	May	42.6	*	*	65.2	*	*	76.5	0.0
	Jun	31.0	*	*	45.5	*	*	70.0	0.0
	Jul	33.6	*	*	43.3	*	*	71.3	0.0
	Aug	40.3	*	*	48.2	*	*	62.0	0.0
	Sep	31.1	*	*	46.5	*	*	59.4	0.0
	Oct	27.7	*	*	40.2	*	*	59.9	0.0
	Nov	37.3	*	*	48.1	*	*	74.9	0.0
	Dec	27.0	*	*	41.2	*	*	84.0	0.0
EIMU		MIN	25 %	50 %	MEAN	75 %	90 %	PEAK	24 hr
1990	Jan	25.3	*	*	36.6	*	*	51.0	0.0
	Feb	20.8	*	*	35.5	*	*	101.5	20.0
	Mar	44.4	*	*	57.8	*	*	96.6	0.0
	Apr	46.5	*	*	54.2	*	*	64.3	0.0
	May	49.6	*	*	62.8	*	*	94.1	0.0
	Jun	36.1	*	*	57.2	*	*	70.9	0.0
	Jul	27.5	*	*	41.8	*	*	66.3	0.0
	Aug	65.8	*	*	76.2	*	*	100.1	20.0
	Sep	35.0	*	*	55.4	*	*	78.3	0.0
	Oct	24.0	*	*	42.9	*	*	70.4	0.0
	Nov	45.4	*	*	70.0	*	*	105.5	40.0
	Dec	17.1	*	*	34.3	*	*	62.2	0.0
Trend of the Average Annual Concentration									
Year	EDMU	ERMU	EIMU						
1976									
1977									
1978									
1979									
1980	98.2	81.7	70.2						
1981	98.1	62.8	64.2						
1982	69.5	49.2	59.3						
1983	62.1	53.5	47.3						
1984	71.7	48.2	47.3						
1985	51.7	38.6	43.2						
1986	83.9	43.5	50.1						
1987	72.7	45.5	49.9						
1988	63.3	39.6	51.6						
1989	55.4	42.6	46.0						
1990	63.2	47.3	52.1						

* - Not available.

a - ≥50 to <75% operational and may not be representative.

b - Below 50% operational and results not representative.

Pollutant Name : SUSPENDED PARTICULATES								Percentage of Readings > Standard
Ambient 24 Hr. Regulation = 100 µg/m3								
CDMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK	24 hr
1990 Jan	53.6 *	*	*	91.2 *	*	*	148.3	40.0
Feb	26.1 *	*	*	54.8 *	*	*	102.2	20.0
Mar	35.4 *	*	*	82.4 *	*	*	200.0	20.0
Apr	40.0 *	*	*	71.9 *	*	*	133.8	20.0
May	68.7 *	*	*	82.4 *	*	*	111.5	20.0
Jun	5.9 *	*	*	35.2 *	*	*	82.2	0.0
Jul	42.0 *	*	*	48.2 *	*	*	57.9	0.0
Aug	36.1 *	*	*	69.2 *	*	*	111.6	20.0
Sep	44.3 *	*	*	64.3 *	*	*	80.9	0.0
Oct	19.7 *	*	*	33.6 *	*	*	54.7	0.0
Nov	28.7 *	*	*	47.2 *	*	*	67.8	0.0
Dec	34.1 *	*	*	68.4 *	*	*	100.9	16.7
CRMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK	24 hr
1990 Jan	22.1 *	*	*	35.1 *	*	*	53.3	0.0
Feb	13.9 *	*	*	24.0 *	*	*	33.8	0.0
Mar	21.9 *	*	*	47.1 *	*	*	69.5	0.0
Apr	33.3 *	*	*	46.0 *	*	*	64.7	0.0
May	34.9 *	*	*	43.8 *	*	*	56.7	0.0
Jun	27.5 *	*	*	41.7 *	*	*	72.6	0.0
Jul	35.5 *	*	*	45.7 *	*	*	67.7	0.0
Aug	44.8 *	*	*	66.4 *	*	*	100.0	0.0
Sep	25.7 *	*	*	59.6 *	*	*	126.0	20.0
Oct	12.1 *	*	*	26.6 *	*	*	46.9	0.0
Nov	16.9 *	*	*	28.9 *	*	*	82.3	0.0
Dec	18.4 *	*	*	29.9 *	*	*	41.3	0.0
CIMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK	24 hr
1990 Jan	42.8 *	*	*	85.7 *	*	*	112.4	40.0
Feb	42.1 *	*	*	81.2 *	*	*	191.2	20.0
Mar	48.1 *	*	*	88.5 *	*	*	170.5	40.0
Apr	46.2 *	*	*	73.4 *	*	*	99.6	0.0
May	73.5 *	*	*	88.4 *	*	*	105.1	20.0
Jun	50.4 *	*	*	65.5 *	*	*	122.1	20.0
Jul	47.1 *	*	*	67.9 *	*	*	102.0	20.0
Aug	65.4 *	*	*	95.3 *	*	*	146.6	40.0
Sep	4.6 *	*	*	55.8 *	*	*	132.0	40.0
Oct	31.0 *	*	*	50.8 *	*	*	75.6	0.0
Nov	35.3 *	*	*	65.1 *	*	*	120.3	20.0
Dec	37.6 *	*	*	69.2 *	*	*	116.8	33.3
Trend of the Average Annual Concentration								
Year	CDMU	CRMU	CIMU					
1976								
1977								
1978								
1979								
1980	165.0	70.4	150.0					
1981	147.0	69.3	133.0					
1982	117.0	48.7	98.1					
1983	80.7	39.4	81.7					
1984	72.1	40.6	70.0					
1985	59.1	38.2	62.5					
1986	79.5	49.5	83.4					
1987	85.3	47.9	75.6					
1988	76.8	38.7	71.1					
1989	62.1	34.8	68.2					
1990	62.4	41.2	73.9					

* - Not available.

a - >50 to <75% operational and may not be representative.

b - Below 50% operational and results not representative.

Pollutant Name : SUSPENDED PARTICULATES								Percentage of Readings > Standard
Ambient 24 Hr. Regulation = 100 µg/m3								
EMMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK	24 hr
1990 Jan	9.6 *	*		21.0 *	*		35.1	0.0
Feb	12.2 *	*		22.2 *	*		50.6	0.0
Mar	13.7 *	*		23.7 *	*		69.4	0.0
Apr	17.3 *	*		24.7 *	*		36.1	0.0
May	44.0 *	*		54.7 *	*		90.2	0.0
Jun	24.4 *	*		31.3 *	*		40.6	0.0
Jul	18.6 *	*		26.1 *	*		31.7	0.0
Aug	21.9 *	*		35.1 *	*		51.8	0.0
Sep	20.9 *	*		38.3 *	*		70.3	0.0
Oct	12.7 *	*		21.9 *	*		39.9	0.0
Nov	31.9 *	*		45.8 *	*		95.3	0.0
Dec	14.0 *	*		22.2 *	*		45.1	0.0
Ellerslie	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK	24 hr
1990 Jan	6.8 *	*		15.8 *	*		29.5	0.0
Feb	4.6 *	*		8.4 *	*		14.2	0.0
Mar	11.0 *	*		18.2 *	*		42.8	0.0
Apr	11.2 *	*		20.5 *	*		28.0	0.0
May	26.1 *	*		42.7 *	*		84.8	0.0
Jun	15.6 *	*		25.8 *	*		48.0	0.0
Jul	17.0 *	*		27.1 *	*		46.3	0.0
Aug	16.2 *	*		25.2 *	*		40.7	0.0
Sep	12.8 *	*		25.3 *	*		38.0	0.0
Oct	6.8 *	*		15.0 *	*		23.8	0.0
Nov	18.0 *	*		27.8 *	*		48.1	0.0
Dec	7.7 *	*		11.9 *	*		17.3	0.0
Trend of the Average Annual Concentration								
Year	EMMU		Ellerslie					
1976								
1977								
1978								
1979								
1980								
1981								
1982			35.3					
1983			34.4					
1984			41.2					
1985	14.3		30.7					
1986	24.7		36.3					
1987	28.5		42.6					
1988	27.1		33.9					
1989	20.8		28.5 a					
1990	30.6		22.0					

* - Not available.

a - >50 to <75% operational and may not be representative.

b - Below 50% operational and results not representative.



Pollutant Name : BENZO (A) PYRENE [$\mu\text{g}/1000 \text{ m}^3$]

EDMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.38 *	*		0.77 *	*		1.93
Feb	0.10 *	*		0.33 *	*		2.55
Mar	0.05 *	*		0.19 *	*		1.13
Apr	0.06 *	*		0.19 *	*		0.63
May	0.06 *	*		0.23 *	*		1.34
Jun	0.06 *	*		0.11 *	*		0.20
Jul	0.07 *	*		0.11 *	*		0.22
Aug	0.07 *	*		0.11 *	*		0.17
Sep	0.05 *	*		0.09 *	*		0.14
Oct	0.03 *	*		0.12 *	*		0.22
Nov	0.29 *	*		0.55 *	*		1.03
Dec	0.23 *	*		0.47 *	*		0.95

ERMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.22 *	*		0.52 *	*		2.04
Feb	0.09 *	*		0.26 *	*		1.31
Mar	0.16 *	*		0.70 *	*		2.31
Apr	0.04 *	*		0.27 *	*		2.78
May	0.07 *	*		0.15 *	*		0.34
Jun	0.06 *	*		0.08 *	*		0.14
Jul	0.02 *	*		0.06 *	*		0.12
Aug	0.02 *	*		0.07 *	*		0.17
Sep	0.09 *	*		0.12 *	*		0.20
Oct	0.04 *	*		0.14 *	*		0.25
Nov	0.23 *	*		0.41 *	*		0.57
Dec	0.07 *	*		0.25 *	*		1.40

EIMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.00 *	*		0.03 *	*		0.28
Feb	0.00 *	*		0.05 *	*		0.51
Mar	0.02 *	*		0.03 *	*		0.04
Apr	0.00 *	*		0.01 *	*		0.12
May	0.00 *	*		0.00 *	*		0.03
Jun	0.00 *	*		0.01 *	*		0.04
Jul	0.00 *	*		0.00 *	*		0.02
Aug	0.00 *	*		0.01 *	*		0.10
Sep	0.00 *	*		0.02 *	*		0.11
Oct	0.00 *	*		0.00 *	*		0.02
Nov	0.18 *	*		0.27 *	*		0.41
Dec	0.04 *	*		0.11 *	*		0.51

Trend of the Average Annual Concentration

Year	EDMU	ERMU	EIMU
1976			
1977			
1978			
1979			
1980			
1981			
1982	0.22	0.11	0.07
1983	0.20	0.10	0.05
1984	0.25	0.14	0.11
1985	0.15	0.09	0.06
1986	0.38	0.17	0.07
1987	0.18	0.13	0.07
1988	0.52	0.21	0.09
1989	0.27	0.31	0.08
1990	0.27	0.25	0.05

* - Not available.

a - ≥ 50 to $< 75\%$ operational and may not be representative.

b - Below 50% operational and results not representative.

Pollutant Name : BENZO (A) PYRENE [$\mu\text{g}/1000 \text{ m}^3$]

CDMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.25 *	*	*	0.57 *	*	*	1.05
Feb	0.02 *	*	*	0.12 *	*	*	0.23
Mar	0.07 *	*	*	0.18 *	*	*	1.28
Apr	0.00 *	*	*	0.03 *	*	*	0.14
May	0.02 *	*	*	0.11 *	*	*	1.64
Jun	0.01 *	*	*	0.03 *	*	*	0.13
Jul	0.00 *	*	*	0.00 *	*	*	0.02
Aug	0.09 *	*	*	0.21 *	*	*	1.81
Sep	0.02 *	*	*	0.11 *	*	*	0.26
Oct	0.04 *	*	*	0.11 *	*	*	0.48
Nov	0.09 *	*	*	0.35 *	*	*	1.27
Dec	0.08 *	*	*	0.30 *	*	*	0.71

CRMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.06 *	*	*	0.14 *	*	*	0.26
Feb	0.03 *	*	*	0.04 *	*	*	0.06
Mar	0.00 *	*	*	0.02 *	*	*	0.09
Apr	0.00 *	*	*	0.01 *	*	*	0.06
May	0.00 *	*	*	0.00 *	*	*	0.04
Jun	0.00 *	*	*	0.00 *	*	*	0.00
Jul	0.00 *	*	*	0.00 *	*	*	0.01
Aug	0.00 *	*	*	0.00 *	*	*	0.04
Sep	0.00 *	*	*	0.01 *	*	*	0.07
Oct	0.00 *	*	*	0.01 *	*	*	0.10
Nov	0.00 *	*	*	0.06 *	*	*	0.21
Dec	0.02 *	*	*	0.08 *	*	*	0.32

CIMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.20 *	*	*	0.43 *	*	*	0.84
Feb	0.14 *	*	*	0.24 *	*	*	0.48
Mar	0.05 *	*	*	0.10 *	*	*	0.38
Apr	0.00 *	*	*	0.01 *	*	*	0.08
May	0.01 *	*	*	0.04 *	*	*	0.13
Jun	0.00 *	*	*	0.01 *	*	*	0.10
Jul	0.01 *	*	*	0.05 *	*	*	0.12
Aug	0.01 *	*	*	0.04 *	*	*	0.15
Sep	0.00 *	*	*	0.03 *	*	*	0.09
Oct	0.00 *	*	*	0.02 *	*	*	0.14
Nov	0.09 *	*	*	0.17 *	*	*	1.11
Dec	0.05 *	*	*	0.25 *	*	*	0.68

Trend of the Average Annual Concentration

Year	CDMU	CRMU	CIMU
1976			
1977			
1978			
1979			
1980			
1981			
1982	0.44	0.05	0.15
1983	0.31	0.06	0.13
1984	0.25	0.07	0.19
1985	0.12	0.03	0.10
1986	0.21	0.06	0.18
1987	0.27	0.07	0.14
1988	0.47	0.09	0.26
1989	0.41	0.09	0.24
1990	0.18	0.03	0.11

* - Not available.

a - 250 to <75% operational and may not be representative.

b - Below 50% operational and results not representative.

Pollutant Name : BENZO (A) PYRENE [$\mu\text{g}/1000 \text{ m}^3$]							
EMMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.04 *	*		0.07 *	*		0.16
Feb	0.00 *	*		0.03 *	*		0.19
Mar	0.00 *	*		0.00 *	*		0.05
Apr	0.00 *	*		0.00 *	*		0.02
May	0.00 *	*		0.00 *	*		0.01
Jun	0.00 *	*		0.00 *	*		0.00
Jul	0.00 *	*		0.00 *	*		0.06
Aug	0.00 *	*		0.00 *	*		0.02
Sep	0.00 *	*		0.00 *	*		0.05
Oct	0.00 *	*		0.01 *	*		0.07
Nov	0.07 *	*		0.13 *	*		0.25
Dec	0.06 *	*		0.11 *	*		0.51
ELLERSLIE	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.02 *	*		0.04 *	*		0.08
Feb	0.00 *	*		0.00 *	*		0.01
Mar	0.00 *	*		0.00 *	*		0.01
Apr	0.00 *	*		0.00 *	*		0.00
May	0.00 *	*		0.00 *	*		0.00
Jun	0.00 *	*		0.00 *	*		0.00
Jul	0.00 *	*		0.00 *	*		0.00
Aug	0.00 *	*		0.00 *	*		0.00
Sep	0.00 *	*		0.00 *	*		0.02
Oct	0.00 *	*		0.00 *	*		0.01
Nov	0.03 *	*		0.07 *	*		0.13
Dec	0.00 *	*		0.02 *	*		0.14
Trend of the Average Annual Concentration							
Year	EMMU		ELLERSLIE				
1976							
1977							
1978							
1979							
1980							
1981							
1982							0.03
1983							0.03
1984							0.10
1985	0.01						0.03
1986	0.03						0.06
1987	0.02						0.05
1988	0.07						0.10
1989	0.03						0.03
1990	0.03						0.01

* - Not available.

a - >50 to <75% operational and may not be representative.

b - Below 50% operational and results not representative.

Pollutant Name : LEAD ($\mu\text{g}/\text{m}^3$)

EDMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.19 *	*		0.25 *	*		0.35
Feb	0.14 *	*		0.21 *	*		0.39
Mar	0.12 *	*		0.16 *	*		0.25
Apr	0.07 *	*		0.11 *	*		0.20
May	0.09 *	*		0.11 *	*		0.16
Jun	0.00 *	*		0.01 *	*		0.08
Jul	0.04 *	*		0.08 *	*		0.15
Aug	0.05 *	*		0.07 *	*		0.09
Sep	0.00 *	*		0.03 *	*		0.14
Oct	0.00 *	*		0.05 *	*		0.21
Nov	0.00 *	*		0.01 *	*		0.10
Dec	0.05 *	*		0.08 *	*		0.12

ERMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.10 *	*		0.20 *	*		0.42
Feb	0.06 *	*		0.22 *	*		0.51
Mar	0.10 *	*		0.19 *	*		0.30
Apr	0.00 *	*		0.01 *	*		0.15
May	0.09 *	*		0.14 *	*		0.22
Jun	0.00 *	*		0.00 *	*		0.13
Jul	0.00 *	*		0.02 *	*		0.06
Aug	0.08 *	*		0.12 *	*		0.47
Sep	0.00 *	*		0.03 *	*		0.11
Oct	0.06 *	*		0.08 *	*		0.13
Nov	0.02 *	*		0.08 *	*		0.16
Dec	0.02 *	*		0.08 *	*		0.12

EIMU	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.04 *	*		0.09 *	*		0.24
Feb	0.03 *	*		0.13 *	*		0.26
Mar	0.00 *	*		0.01 *	*		0.09
Apr	0.00 *	*		0.02 *	*		0.05
May	0.05 *	*		0.09 *	*		0.13
Jun	0.08 *	*		0.09 *	*		0.10
Jul	0.00 *	*		0.01 *	*		0.08
Aug	0.01 *	*		0.02 *	*		0.13
Sep	0.00 *	*		0.02 *	*		0.10
Oct	0.00 *	*		0.01 *	*		0.07
Nov	0.00 *	*		0.00 *	*		0.01
Dec	0.00 *	*		0.02 *	*		0.20

Trend of the Average Annual Concentration

Year	EDMU	ERMU	EIMU
1976			
1977			
1978			
1979			
1980	0.53	0.48	0.22
1981	0.52	0.42	0.20
1982	0.46	0.37	0.19
1983	0.36	0.32	0.13
1984	0.41	0.31	0.13
1985	0.30	0.23	0.11
1986	0.23	0.19	0.09
1987	0.18	0.14	0.06
1988	0.16	0.12	0.07
1989	0.22	0.19	0.07
1990	0.10	0.10	0.04

* - Not available.

a - >50 to <75% operational and may not be representative.

b - Below 50% operational and results not representative.

Pollutant Name : LEAD [µg/m3]							
CDMU							
	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.11 *	*	*	0.24 *	*	*	0.61
Feb	0.09 *	*	*	0.13 *	*	*	0.17
Mar	0.07 *	*	*	0.14 *	*	*	0.24
Apr	0.00 *	*	*	0.05 *	*	*	0.22
May	0.13 *	*	*	0.16 *	*	*	0.32
Jun	0.00 *	*	*	0.03 *	*	*	0.19
Jul	0.10 *	*	*	0.11 *	*	*	0.11
Aug	0.01 *	*	*	0.06 *	*	*	0.16
Sep	0.03 *	*	*	0.07 *	*	*	0.12
Oct	0.02 *	*	*	0.05 *	*	*	0.13
Nov	0.00 *	*	*	0.00 *	*	*	0.00
Dec	0.00 *	*	*	0.03 *	*	*	0.13
CRMU							
	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.08 *	*	*	0.15 *	*	*	0.41
Feb	0.06 *	*	*	0.08 *	*	*	0.10
Mar	0.06 *	*	*	0.11 *	*	*	0.21
Apr	0.00 *	*	*	0.02 *	*	*	0.10
May	0.05 *	*	*	0.09 *	*	*	0.17
Jun	0.00 *	*	*	0.03 *	*	*	0.11
Jul	0.00 *	*	*	0.02 *	*	*	0.06
Aug	0.00 *	*	*	0.02 *	*	*	0.08
Sep	0.00 *	*	*	0.01 *	*	*	0.09
Oct	0.02 *	*	*	0.05 *	*	*	0.08
Nov	0.00 *	*	*	0.02 *	*	*	0.08
Dec	0.00 *	*	*	0.02 *	*	*	0.07
CIMU							
	MIN	25 %	50 %	MEAN	75 %	90 %	PEAK
1990 Jan	0.16 *	*	*	0.35 *	*	*	0.76
Feb	0.08 *	*	*	0.32 *	*	*	0.61
Mar	0.12 *	*	*	0.22 *	*	*	0.39
Apr	0.00 *	*	*	0.02 *	*	*	0.25
May	0.23 *	*	*	0.29 *	*	*	0.37
Jun	0.00 *	*	*	0.01 *	*	*	0.21
Jul	0.06 *	*	*	0.09 *	*	*	0.19
Aug	0.09 *	*	*	0.13 *	*	*	0.17
Sep	0.01 *	*	*	0.04 *	*	*	0.13
Oct	0.03 *	*	*	0.06 *	*	*	0.17
Nov	0.00 *	*	*	0.01 *	*	*	0.81
Dec	0.02 *	*	*	0.08 *	*	*	0.37
Trend of the Average Annual Concentration							
Year	CDMU	CRMU	CIMU				
1976							
1977							
1978							
1979							
1980	0.66	0.34	0.42				
1981	0.64	0.26	0.48				
1982	0.61	0.28	0.43				
1983	0.44	0.23	0.41				
1984	0.39	0.16	0.38				
1985	0.27	0.13	0.30				
1986	0.24	0.11	0.31				
1987	0.18	0.09	0.22				
1988	0.16	0.07	0.25				
1989	0.17	0.10	0.25				
1990	0.09	0.05	0.14				

* - Not available.

a - ≥50 to <75% operational and may not be representative.

b - Below 50% operational and results not representative.

Pollutant Name : LEAD [$\mu\text{g}/\text{m}^3$]						
EMMU	MIN	25 %	50 %	MEAN	75 %	90 % PEAK
1990 Jan	0.02	*	*	0.07	*	0.34
Feb	0.03	*	*	0.09	*	0.23
Mar	0.00	*	*	0.00	*	0.02
Apr	0.00	*	*	0.01	*	0.08
May	0.07	*	*	0.08	*	0.10
Jun	0.00	*	*	0.02	*	0.08
Jul	0.00	*	*	0.00	*	0.01
Aug	0.00	*	*	0.01	*	0.08
Sep	0.00	*	*	0.00	*	0.05
Oct	0.02	*	*	0.05	*	0.08
Nov	0.00	*	*	0.01	*	0.04
Dec	0.00	*	*	0.02	*	0.08
ELLERSLIE	MIN	25 %	50 %	MEAN	75 %	90 % PEAK
1990 Jan	0.01	*	*	0.04	*	0.07
Feb	0.02	*	*	0.04	*	0.07
Mar	0.00	*	*	0.00	*	0.03
Apr	0.01	*	*	0.03	*	0.07
May	0.05	*	*	0.06	*	0.07
Jun	0.00	*	*	0.02	*	0.06
Jul	0.00	*	*	0.01	*	0.07
Aug	0.00	*	*	0.00	*	0.02
Sep	0.00	*	*	0.01	*	0.06
Oct	0.00	*	*	0.02	*	0.05
Nov	0.01	*	*	0.03	*	0.12
Dec	0.00	*	*	0.01	*	0.05
Trend of the Average Annual Concentration						
Year	EMMU		ELLERSLIE			
1976						
1977						
1978						
1979						
1980						
1981						
1982						0.10
1983						0.11
1984						0.15
1985			0.03			0.10
1986			0.03			0.07
1987			0.02			0.07
1988			0.04			0.04
1989			0.04			0.06
1990			0.03			0.02

* - Not available.

a - ≥ 50 to $< 75\%$ operational and may not be representative.

b - Below 50% operational and results not representative.

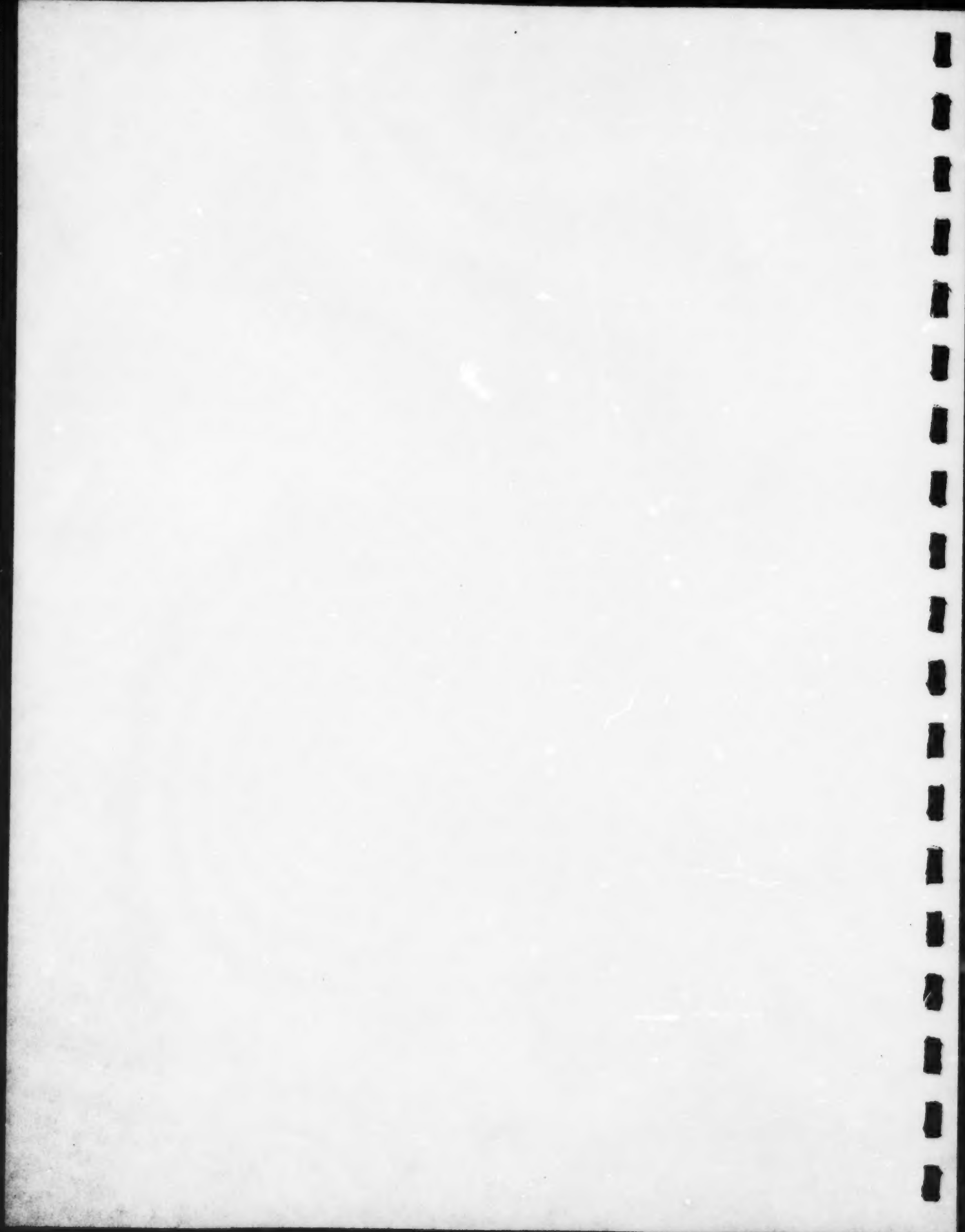


VINYL CHLORIDE MONOMER
FORT SASKATCHEWAN 1990
(ppb)

Station: Fort Saskatchewan Monitoring Unit				Station: West of Dow			
MONTH	MIN	MEAN	MAX	MONTH	MIN	MEAN	MAX
Jan	0.00	0.07	0.20	Jan	0.25	0.28	0.30
Feb	0.00	0.10	0.28	Feb	0.17	0.17	0.17
Mar	0.00	0.06	0.20	Mar	0.08	0.16	0.27
Apr	0.00	0.00	0.00	Apr	0.00	0.00	0.00
May	0.00	0.01	0.14	May	0.00	0.00	0.00
Jun	0.00	0.03	0.43	Jun	0.00	0.00	0.00
Jul	0.00	0.05	0.51	Jul	*	*	*
Aug	0.00	0.00	0.00	Aug	0.00	0.00	0.00
Sep	0.00	0.04	0.18	Sep	*	*	*
Oct	0.00	0.00	0.00	Oct	0.00	0.00	0.00
Nov	0.00	0.00	0.00	Nov	0.00	0.00	0.00
Dec	0.00	0.00	0.00	Dec	0.00	0.00	0.00

Station: West of Diamond Shamrock			
MONTH	MIN	MEAN	MAX
Jan	0.28	0.72	1.16
Feb	0.00	0.00	0.00
Mar	0.00	0.39	0.73
Apr	0.00	0.00	0.00
May	0.00	0.00	0.00
Jun	0.00	0.00	0.00
Jul	*	*	*
Aug	0.00	0.00	0.00
Sep	*	*	*
Oct	0.00	0.00	0.00
Nov	0.00	0.00	0.00
Dec	0.00	0.00	0.00

* no data

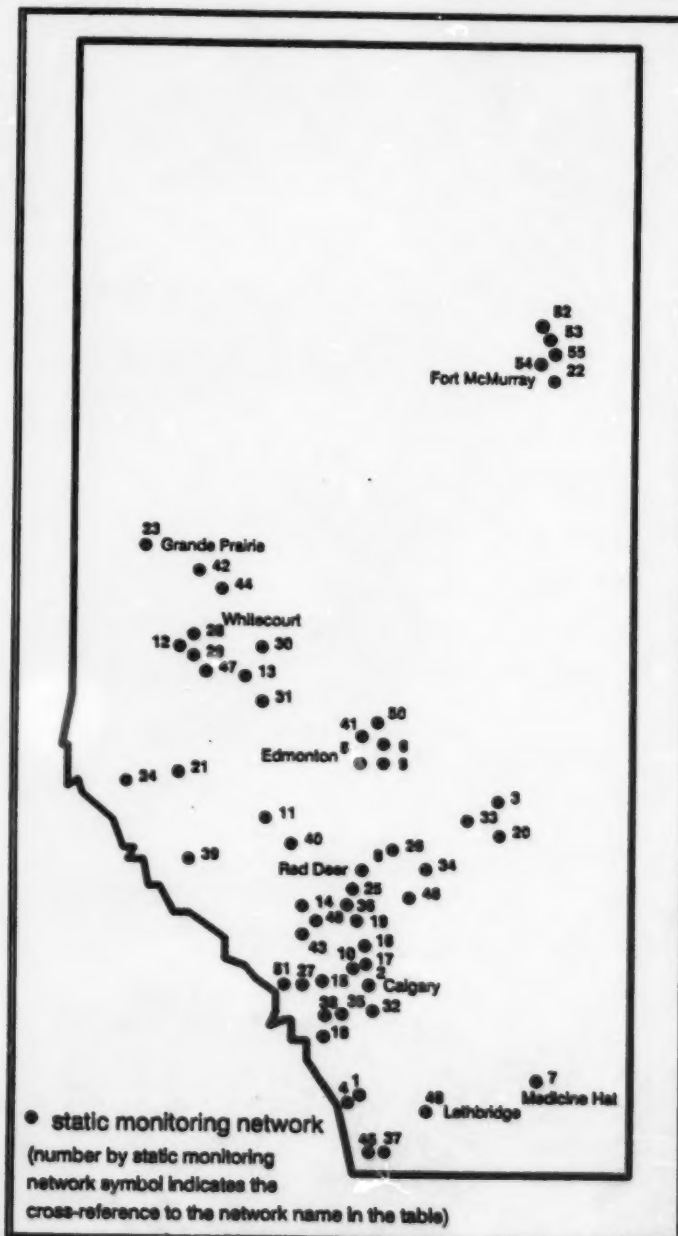


LOCATION OF STATIC AIR QUALITY MONITORING NETWORKS

Map Location	Network Location
1	Blairmore
2	Calgary
3	Camrose
4	Coleman
5	Edmonton
6	Fort Saskatchewan
7	Medicine Hat
8	Red Deer
9	Sherwood Park
10	Balzac
11	Buck Lake
12	Bigstone
13	Blue Ridge
14	Caroline
16	Carstairs
15	Cochrane
17	Crossfield
18	Diamond Valley
19	Didsbury
20	Edburg
21	Edson
22	Fort McMurray
23	Grande Prairie
24	Hinton
25	Innisfail
26	Joffre
27	Jumping Pound
28	Kaybob
29	Kaybob (south)
30	Lone Pine Creek
31	Mayerthorpe
32	Mazeppa
33	New Norway
34	Nevis
35	Okotoks
36	Olds
37	Pincher Creek
38	Quirk Creek
39	Ram River
40	Rimbey
41	St. Albert
42	Simonette
43	Sundre
44	Valleyview
45	Waterton

Map Location	Network Location
46	Wimborne
47	Windfall
48	Lethbridge
49	Raven Brood
50	Redwater

Map Location	Network Location
51	Exshaw
52	Bitumont Tower
53	Ells Tower
54	Thickwood Tower
55	Muskeg Tower





STATIC MONITORING RESULTS

YEAR: 1990

POLLUTANT: TOTAL DUSTFALL

MONITORING PERIOD: ONE-MONTH

GUIDELINE: 52 MG/100 CM2/30 DAYS (RESIDENTIAL)

GUIDELINE: 158 MG/100 CM2/30 DAYS (INDUSTRIAL)

UNITS: MG/100 CM2/30 DAYS

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG	# OF STATIONS
BLAINMORE	17.2	8.7	26.0	31.0	72.0	74.9	201.7	43.8	16.2	31.9	18.1	9.1	47.5	2
CALGARY	47.2	*	33.0	68.3	110.1	63.8	59.2	52.1	71.8	50.2	49.0	73.1	61.3	3
CAMROSE	20.0	3.2	37.9	66.8	117.1	43.0	38.4	21.5	31.9	42.9	18.9	46.3	40.7	1
COLEMAN	41.5	13.6	18.4	30.2	53.0	31.4	46.9	28.2	20.6	74.3	39.3	25.4	35.0	12
EDMONTON	35.4	19.7	66.5	79.1	128.9	105.6	53.1	50.8	54.5	74.8	27.9	35.2	60.4	27
EIMU	16.4	15.4	40.0	40.9	73.9	54.1	44.0	40.5	45.5	13.1	2.6	23.3	34.1	1
ERNU	32.2	20.8	35.2	24.8	79.9	31.2	22.6	14.6	19.3	6.5	3.6	17.2	25.7	1
EXSHAW	79.0	63.7	110.6	28.4	154.7	88.7	42.3	25.1	21.8	20.7	45.8	42.8	59.5	5
FORT SASKATCHEWAN	28.7	3.7	29.7	24.6	*	44.4	27.8	28.1	21.6	21.4	14.2	24.3	24.4	1
LETHBRIDGE	30.1	46.4	94.8	67.8	249.9	225.8	34.5	46.1	71.2	92.1	80.2	71.2	93.5	6
MEDICINE HAT	26.3	27.0	36.3	33.6	77.9	53.1	32.2	23.2	26.1	55.5	18.1	57.2	38.9	5
RED DEER	13.1	*	13.9	*	58.3	39.7	*	19.5	32.3	23.9	8.3	*	26.1	1
SHERWOOD PARK	10.6	6.7	35.2	50.8	90.2	247.2	48.6	24.0	35.5	32.6	26.6	20.9	52.2	3

* DATA NOT AVAILABLE



STATIC MONITORING RESULTS
 YEAR: 1990
 POLLUTANT: CALCIUM
 MONITORING PERIOD: ONE-MONTH
 UNITS: MG/100 CM²/30 DAYS

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG	# OF STATIONS
EDMONTON	7.9	1.1	8.3	5.8	11.6	8.6	5.5	4.8	3.9	10.5	1.0	5.6	6.4	3
EINU	0.8	0.9	5.1	2.3	2.8	2.1	2.3	1.7	2.6	1.8	0.9	1.4	2.1	1
ERMU	0.4	0.0	1.6	0.1	2.4	1.4	0.9	0.1	1.0	1.6	1.2	1.2	1.0	1
EKSHAW	27.4	19.7	26.8	6.1	16.4	16.1	6.2	5.8	5.2	8.9	16.4	12.3	14.1	5

* DATA NOT AVAILABLE



STATIC MONITORING RESULTS
 YEAR: 1990
 POLLUTANT: TOTAL SULPHATION
 MONITORING PERIOD: ONE-MONTH
 GUIDELINE: 0.50 MG/DAY/100 CM2
 UNITS: MG/DAY/100 CM2

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG	# OF STATIONS
BITUMONT TOWER	*	*	*	*	*	*	*	0.027	0.051	0.049	*	0.155	0.071	1
CALGARY	0.086	*	0.085	0.085	0.044	0.047	0.064	0.042	0.056	0.044	0.073	0.091	0.067	38
CAMROSE	0.076	0.080	0.034	0.033	0.036	0.031	0.034	0.030	0.038	0.029	0.065	0.080	0.047	1
EDMONTON	0.059	0.069	0.047	0.039	0.029	0.033	0.032	0.030	0.038	0.040	0.056	0.066	0.045	27
ERIMU	*	0.140	0.073	0.063	0.037	0.044	0.070	0.076	0.070	0.076	0.089	0.106	0.077	1
ELLS TOWER	*	*	*	*	*	*	*	0.000	0.000	0.016	*	0.005	0.005	1
ERMU	0.046	*	0.073	0.038	0.031	0.025	0.038	0.032	0.042	0.043	0.059	0.083	0.046	1
FORT MCMURRAY	0.045	0.095	0.061	0.092	0.122	0.035	0.064	*	0.062	0.047	0.050	0.041	0.061	6
FORT SASKATCHEWAN	0.029	0.113	0.072	0.046	0.046	0.048	0.043	0.038	0.058	0.047	0.083	0.099	0.063	4
FORT SASKATCHEWAN (SPECIAL)	0.070	0.102	0.072	0.057	0.041	0.038	0.047	0.038	0.042	0.060	0.075	*	0.058	1
GRANDE PRAIRIE	0.025	0.034	0.012	0.012	0.012	0.008	0.006	0.006	0.007	0.012	0.012	0.025	0.014	1
HINTON	0.013	*	0.007	0.003	0.002	0.004	0.004	0.002	0.002	0.002	0.002	*	0.004	3
JOFFRE	0.045	*	0.076	*	0.054	0.013	*	0.012	0.023	0.026	0.041	*	0.036	2
LETHBRIDGE	0.032	0.045	0.032	0.033	0.029	0.021	0.036	0.037	0.022	0.013	0.025	0.047	0.031	5
MEDICINE HAT	0.033	0.024	0.034	0.019	0.019	0.017	0.019	0.016	0.033	0.021	0.036	0.043	0.026	5
MUSKEG TOWER	*	*	*	*	*	*	*	0.041	0.057	0.043	*	0.130	0.068	1
NEW NORWAY	0.090	*	0.070	0.078	0.027	0.027	*	0.018	0.031	*	0.057	*	0.050	1

* DATA NOT AVAILABLE

STATIC MONITORING RESULTS
 YEAR: 1990
 POLLUTANT: TOTAL SULPHATION
 MONITORING PERIOD: ONE-MONTH
 GUIDELINE: 0.50 MG/DAY/100 CM2
 UNITS: MG/DAY/100 CM2

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG	# OF STATIONS
RAVEN BROOD	*	0.028	0.019	*	0.037	0.013	0.011	*	0.018	0.014	0.019	0.018	0.020	1
RED DEER	0.065	*	*	*	0.038	0.018	*	0.012	0.013	0.019	0.027	*	0.033	2
REDWATER	0.049	0.180	0.079	0.075	0.061	0.046	0.038	0.049	0.046	0.075	0.095	0.090	0.073	4
SHERWOOD PARK	0.065	0.089	0.085	0.056	0.025	0.045	0.048	0.052	0.075	0.075	0.069	0.084	0.065	3
ST. ALBERT	0.017	0.011	0.013	0.011	0.009	0.011	0.008	0.008	0.004	0.010	0.014	0.023	0.011	2
THICKWOOD TOWER	*	*	*	*	*	*	*	0.027	0.013	0.011	*	0.045	0.024	1

* DATA NOT AVAILABLE

STATIC MONITORING RESULTS
 YEAR: 1990
 POLLUTANT: TOTAL SULPHATION
 MONITORING PERIOD: THREE-MONTHS
 GUIDELINE: 0.50 MG/DAY/100 CM2
 UNITS: MG/DAY/100 CM2

STATION	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC	AVG	# OF STATIONS
BALZAC	0.074	0.047	0.048	0.068	0.060	4
BIGSTONE	*	*	0.007	*	0.007	2
BLUE RIDGE	*	0.051	0.036	*	0.043	4
BUCK LAKE	0.060	0.029	0.028	*	0.039	4
CAROLINE	0.045	0.032	0.027	*	0.035	2
CARSTAIRS	0.050	0.036	0.033	0.044	0.041	4
COCHRANE	0.111	0.038	0.044	0.076	0.067	4
COLEMAN	0.141	0.128	0.085	0.063	0.104	4
CROSSFIELD	0.082	0.054	0.044	0.072	0.063	5
DIAMOND VALLEY	0.042	0.030	0.030	0.033	0.034	4
DIDSBURY	0.050	0.026	0.032	*	0.037	7
EDBURG	0.086	0.025	0.039	*	0.050	1
EDSON	0.023	0.031	0.019	0.019	0.023	4
INNISFAIL	0.076	0.053	0.048	*	0.060	4
JUMPING POUND	0.061	0.047	0.034	0.057	0.050	4
KAYBOB	*	0.051	0.024	*	0.040	4
KAYBOB SOUTH	*	0.077	0.045	*	0.061	4
LONE PINE CREEK	0.068	0.040	0.042	0.051	0.050	5
MAYERTHORPE	*	0.036	0.014	*	0.028	2

* DATA NOT AVAILABLE

STATIC MONITORING RESULTS
 YEAR: 1990
 POLLUTANT: TOTAL SULPHATION
 MONITORING PERIOD: THREE-MONTHS
 GUIDELINE: 0.50 MG/DAY/100 CM2
 UNITS: MG/DAY/100 CM2

STATION	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC	AVG	# OF STATIONS
HAIEPPA	0.048	0.044	0.040	0.038	0.043	4
NEVIS	0.074	0.029	0.041	*	0.048	7
OKOTOKS	0.058	0.057	0.059	0.044	0.054	5
OLDS	0.074	0.053	0.047	*	0.060	4
PINCHER CREEK	0.036	0.032	0.023	0.042	0.033	6
QUIRK CREEK	0.043	0.033	0.027	0.040	0.036	6
RAM RIVER	0.066	0.049	0.039	*	0.052	5
RED DEER	0.056	0.017	0.031	*	0.036	4
REDWATER	0.197	0.114	0.143	0.159	0.153	4
RIMBEY	0.058	0.027	0.029	*	0.041	4
SIMONETTE	*	0.031	0.029	*	0.030	2
SUNDRE	0.078	0.057	0.046	*	0.060	2
VALLEYVIEW	*	*	0.078	*	0.078	2
WATERTON	0.077	0.068	0.063	0.078	0.072	8
WIMBORNE	0.083	0.066	0.054	*	0.068	2
WINDFALL	*	0.053	0.119	*	0.086	4

* DATA NOT AVAILABLE

STATIC MONITORING RESULTS
 YEAR: 1990
 POLLUTANT: HYDROGEN SULPHIDE
 MONITORING PERIOD: ONE-MONTH
 GUIDELINE: 0.10 MG/DAY/100 CM2
 UNITS: MG/DAY/100 CM2

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG	# OF STATIONS
BITUMONT TOWER	*	*	*	*	*	*	*	0.000	0.007	0.011	0.006	0.018	0.008	1
CAMROSE	0.013	0.011	0.007	0.007	0.006	0.003	0.007	0.003	0.007	0.012	0.013	0.006	0.008	1
ELLS TOWER	*	*	*	*	*	*	*	0.000	0.010	0.006	*	0.000	0.004	1
FORT MCMURRAY	0.003	0.028	0.021	0.024	0.020	0.008	0.015	*	0.005	0.015	0.010	0.007	0.014	6
FORT SASKATCHEWAN (SPECIAL)	0.000	0.000	0.000	0.000	0.000	0.004	0.003	0.003	0.000	0.003	0.000	0.003	0.001	1
GRANDE PRAIRIE	0.025	0.034	0.012	0.012	0.012	0.008	0.006	0.006	0.007	0.012	0.012	0.025	0.014	1
HINTON	0.006	*	0.004	0.002	0.001	0.002	0.006	0.003	0.001	0.001	0.000	0.002	0.002	3
JOFFRE	0.014	*	0.027	*	0.002	0.002	*	0.002	0.000	0.006	0.019	*	0.009	2
MUSKEG TOWER	*	*	*	*	*	*	*	0.000	0.007	0.003	0.014	0.018	0.008	1
NEW NORWAY	0.016	*	0.016	0.003	0.005	0.002	*	0.007	0.008	*	0.011	*	0.009	1
RED DEER	0.013	*	0.013	*	0.001	0.000	*	0.000	0.010	0.010	0.005	*	0.007	2
SHERWOOD PARK	0.011	0.016	0.012	0.018	0.003	0.004	0.005	0.005	0.015	0.014	0.017	0.013	0.011	3
ST. ALBERT	0.006	0.004	0.007	0.004	0.006	0.003	0.006	0.003	0.004	0.007	0.002	0.004	0.004	2
THICKWOOD TOWER	*	*	*	*	*	*	*	0.000	0.000	0.000	0.008	*	0.002	1

* DATA NOT AVAILABLE

STATIC MONITORING RESULTS
 YEAR: 1990
 POLLUTANT: HYDROGEN SULPHIDE
 MONITORING PERIOD: THREE-MONTHS
 GUIDELINE: 0.10 MG/DAY/100 CM2
 UNITS: MG/DAY/100 CM2

STATION	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC	AVG	# OF STATIONS
BALZAC	0.006	0.002	0.004	0.010	0.006	4
BIGSTONE	*	0.001	*	*	0.001	2
BLUE RIDGE	*	0.001	0.001	*	0.001	4
BUCK LAKE	0.002	0.002	0.003	*	0.002	4
CAROLINE	0.002	0.001	0.001	*	0.001	2
CARSTAIRS	0.005	0.000	0.005	0.005	0.004	4
COCHRANE	0.015	0.002	0.005	0.011	0.008	4
COLEMAN	0.018	0.002	0.001	0.009	0.008	4
CROSSFIELD	0.005	0.001	0.005	0.007	0.004	5
DIAMOND VALLEY	0.003	0.002	0.003	0.002	0.002	4
DIDSBURY	0.002	0.002	0.001	*	0.002	7
EDBURG	0.002	0.003	*	*	0.003	1
EDSON	0.002	0.002	0.001	0.001	0.002	4
INNISFAIL	0.004	0.001	0.002	*	0.002	4
JUMPING POUND	0.006	0.001	0.004	0.010	0.005	4
KAYBOB	*	0.001	0.001	*	0.001	4
KAYBOB SOUTH	*	0.002	0.003	*	0.002	4
LONE PINE CREEK	0.006	0.001	0.001	0.004	0.003	5
MAYERTHORPE	*	0.001	*	*	0.001	2

* DATA NOT AVAILABLE

STATIC MONITORING RESULTS
 YEAR: 1990
 POLLUTANT: HYDROGEN SULPHIDE
 MONITORING PERIOD: THREE-MONTHS
 GUIDELINE: 0.10 MG/DAY/100 CM2
 UNITS: MG/DAY/100 CM2

STATION	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC	AVG	# OF STATIONS
MAZEPPA	0.003	0.001	0.001	0.001	0.001	4
NEVIS	0.001	0.002	0.002	*	0.002	7
OKOTOKS	0.005	0.003	0.000	0.005	0.004	5
OLDS	0.002	0.002	0.000	*	0.001	4
PINCHER CREEK	0.001	0.002	0.000	0.004	0.002	6
QUIRK CREEK	0.004	0.001	0.001	0.002	0.002	6
RAM RIVER	0.003	0.003	0.003	*	0.003	5
RED DEER	0.001	0.004	0.001	*	0.002	4
REDWATER	0.028	0.002	0.004	0.017	0.013	4
RIMBEY	0.001	0.004	0.002	*	0.002	4
SIMONETTE	*	0.001	*	*	0.001	2
SUNDRE	0.002	0.003	0.002	*	0.002	2
VALLEYVIEW	*	0.001	0.002	*	0.002	2
WATERTON	0.004	0.001	0.002	0.010	0.004	8
WIMBORNE	0.003	0.001	0.002	*	0.002	2
WINDFALL	*	0.001	0.007	*	0.004	4

* DATA NOT AVAILABLE



STATIC MONITORING RESULTS
 YEAR: 1990
 POLLUTANT: FLUORIDE
 MONITORING PERIOD: ONE-MONTH
 GUIDELINE: 40 UG/100 CM2/30 DAYS
 UNITS: UG/100 CM2/30 DAYS

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVG	# OF STATIONS
FORT SASKATCHEWAN (SPECIAL)	3	2	15	3	4	1	2	6	7	2	3	1	4	1
MEDICINE HAT	9	4	*	23	14	*	*	*	*	*	*	*	13	1
REDWATER	3	6	12	5	9	9	12	14	11	7	4	3	8	4

* DATA NOT AVAILABLE

LOCATION OF ACID PRECIPITATION MONITORING STATIONS



ACID PRECIPITATION MONITORING RESULTS

YEAR: 1990

STATION: BEAVERLODGE

Month	Sample Period (days)	Catch of Collector (ml)	Total Precip.* (mm)	pH	Specific Cond. (us/cm)	Total Acidity (ueq/l)	Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Strong Acidity (ueq/l)	Cond. Ratio	Cation/Anion Ratio
1	31	284.0	42.7	5.38	2.40	31.76	0.064	0.104	<0.01	0.032	<0.01	0.013	0.007	0.005	<0.01	<15	1.118	0.626
2	28	9.8	15.1	5.28	3.83	27.45	0.038	0.064	<0.01	0.019	<0.01	0.008	0.004	0.014	0.002	<15	1.077	0.850
3	31	5.4	3.0	5.03	7.80	a	0.014	0.016	0.001	0.010	<0.01	0.007	0.000	0.003	0.001	a	1.200	1.035
4	30	222.0	17.0	4.92	9.76	48.40	0.249	0.091	0.032	0.029	<0.01	0.015	0.021	0.031	0.005	37.70	0.988	1.041
5	31	1532.0	58.2	4.66	12.54	68.54	0.861	0.455	0.100	0.041	<0.01	0.019	0.020	0.090	0.014	22.96	0.999	0.950
6	32	5103.0	111.0	5.26	3.38	34.94	0.296	0.252	<0.01	0.039	<0.01	0.011	0.016	0.022	<0.01	<15	1.189	0.656
7	29	1486.0	39.5	5.10	4.72	44.36	0.194	0.072	<0.01	0.018	<0.01	0.006	0.009	0.031	0.005	<15	1.101	0.941
8	32	1298.0	44.5	5.02	5.46	55.36	0.202	0.159	0.027	0.028	<0.01	0.013	0.015	0.026	0.004	<15	1.040	1.076
9	29	404.0	20.8	4.98	6.04	74.31	0.119	0.096	<0.01	0.013	<0.01	0.014	0.006	0.027	0.004	29.32	1.017	1.020
10	31	700.0	40.8	5.13	5.89	53.40	0.215	0.172	0.008	0.053	<0.01	0.022	0.023	0.032	0.007	<15	1.212	0.794
11	30	596.0	62.4	5.61	1.97	42.05	0.087	0.060	<0.01	0.031	<0.01	0.012	0.006	0.014	<0.01	<15	1.296	0.596
12	32	549.0	52.8	5.22	2.78	37.39	0.063	0.154	<0.01	0.025	<0.01	0.005	0.009	0.015	<0.01	<15	0.954	0.886

ACID PRECIPITATION MONITORING RESULTS

YEAR: 1990

STATION: CALGARY

Month	Sample Period (days)	Catch of Collector (ml)	Total Precip.* (mm)	pH	Specific Cond. (us/cm)	Total Acidity (ueq/l)	Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Strong Acidity (ueq/l)	Cond. Ratio	Cation/Anion Ratio
1	29	76.0	5.6	5.85	a	21.40	0.036	0.070	0.016	0.029	<0.01	0.016	0.001	0.019	0.005	<15	a	1.034
2	28	99.0	6.4	5.61	6.45	17.73	0.038	0.068	0.017	0.016	<0.01	0.006	0.001	0.019	0.004	<15	1.061	1.063
3	33	39.0	8.7	6.28	12.31	a	1.501	0.104	0.050	0.056	<0.01	0.035	0.014	0.037	0.012	a	b	b
4	28	354.0	21.2	6.36	11.64	25.10	0.407	0.285	0.165	0.039	<0.01	0.018	0.004	0.135	0.023	<15	1.008	1.136
5	31	3001.0	100.2	6.03	8.06	32.21	1.447	1.024	0.654	0.087	<0.01	0.041	0.032	0.260	0.040	<15	0.997	1.032
6	32	2501.0	61.3	6.10	43.55	1.00	0.411	0.110	0.038	<0.01	0.015	0.039	0.184	0.037	<0.01	1.12	0.966	0.992
7	27	1303.0	83.7	4.96	9.97	51.21	1.198	0.743	0.208	0.042	<0.01	0.015	0.023	0.231	0.045	40.73	1.040	0.992
8	36	3679.0	58.3	5.49	6.17	40.50	0.530	0.444	0.223	0.047	<0.01	0.006	0.013	0.101	0.016	34.24	1.025	1.040
9	31	301.0	7.5	5.04	5.85	56.88	0.081	0.026	<0.01	0.005	<0.01	0.001	0.003	0.040	0.008	42.32	0.983	1.137
10	27	193.0	12.9	5.80	6.14	42.21	0.087	0.132	0.057	0.019	<0.01	0.005	0.004	0.026	0.005	<15	0.993	1.037
11	29	259.0	20.7	5.33	4.42	34.59	0.060	0.184	0.020	0.032	<0.01	0.013	0.002	0.034	0.008	<15	1.066	0.839
12	36	62.0	11.7	5.69	8.01	a	0.100	0.165	0.057	0.024	<0.01	0.010	0.002	0.036	0.007	a	1.039	1.103

* from closest Environment Canada weather station

a insufficient sample for analysis

b data not available

ACID PRECIPITATION MONITORING RESULTS
YEAR: 1990
STATION: COLD LAKE

Month	Sample Period (days)	Catch of Precip.* (mm)	pH	Specific Cond. (us/cm)	Total Acidity (ueq/l)	Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Strong Acidity (ueq/l)	Cond. Ratio	Cation/Anion Ratio
1	b	22.0	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
2	28	181.0	18.2	5.28	4.12	27.57	0.054	0.077	0.005	0.009	<0.01	0.003	0.018	0.003	<15	1.172	0.941
3	28	189.0	18.6	5.25	4.70	39.12	0.081	0.120	0.027	0.015	<0.01	0.005	0.002	0.003	<15	1.011	0.924
4	33	412.0	23.0	4.97	12.18	45.50	0.435	0.282	0.130	0.019	<0.01	0.008	0.014	0.066	<15	0.993	1.012
5	29	348.0	20.6	5.96	13.20	50.49	0.551	0.253	0.198	0.039	0.074	0.018	0.037	0.076	<15	0.965	0.927
6	32	932.0	22.0	6.14	9.95	72.15	0.218	0.156	0.177	0.030	0.053	0.011	0.065	0.031	<15	1.131	1.436
7	28	3991.0	130.6	5.59	5.59	83.98	0.895	0.615	0.525	0.065	0.208	0.026	0.131	0.055	<15	1.029	1.191
8	34	1628.0	48.9	5.97	9.38	73.87	0.505	0.454	0.314	0.048	0.201	0.050	0.095	0.124	<15	1.036	1.236
9	21	553.0	21.0	5.78	6.58	58.95	0.203	0.176	0.067	0.039	<0.01	0.022	0.016	0.066	<15	0.994	1.143
10	33	200.0	18.0	5.90	13.80	102.20	0.293	0.163	0.076	0.158	<0.01	0.093	0.030	0.163	70.80	1.055	1.488
11	30	423.0	29.6	5.65	3.34	49.64	0.067	0.193	0.028	0.013	<0.01	0.004	0.003	0.026	<15	1.162	0.769
12	31	255.0	27.7	4.87	6.70	60.42	0.105	0.178	0.010	0.012	<0.01	0.003	0.013	0.003	49.92	1.024	0.969

ACID PRECIPITATION MONITORING RESULTS
YEAR: 1990
STATION: EDMONTON

Month	Sample Period (days)	Catch of Precip.* (mm)	pH	Specific Cond. (us/cm)	Total Acidity (ueq/l)	Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Strong Acidity (ueq/l)	Cond. Ratio	Cation/Anion Ratio
1	29	192.5	13.6	6.52	12.76	26.77	0.226	0.143	0.086	<0.01	0.034	0.037	0.107	0.013	<15	1.037	1.194
2	27	368.0	15.6	5.19	7.03	33.59	0.119	0.148	0.015	0.022	<0.01	0.011	0.002	0.053	<15	1.030	0.990
3	33	224.0	18.2	5.03	9.26	45.20	0.140	0.258	0.052	0.044	<0.01	0.026	0.005	0.046	33.49	1.013	1.027
4	29	1362.0	61.0	5.66	8.10	33.10	0.870	0.528	0.364	0.060	<0.01	0.024	0.014	0.106	<15	1.062	0.990
5	31	1671.0	53.7	5.89	14.20	80.39	1.481	0.869	0.483	0.075	<0.01	0.071	0.060	0.308	67.35	1.033	1.055
6	33	5424.0	63.8	5.24	7.46	46.18	0.736	0.473	0.219	0.030	<0.01	0.027	0.031	0.109	<15	1.036	0.990
7	29	2546.0	149.3	5.17	4.28	34.63	0.537	0.337	0.060	0.075	<0.01	0.019	0.028	0.087	<15	1.118	1.021
8	31	2005.0	64.2	5.04	8.56	66.83	0.749	0.460	0.167	0.059	<0.01	0.022	0.035	0.152	<15	1.031	1.072
9	31	166.0	4.2	4.59	20.40	86.80	0.125	0.062	0.015	0.009	<0.01	0.004	0.005	0.025	30.64	1.016	1.001
10	31	240.0	21.3	4.87	17.80	75.60	0.590	0.290	0.128	0.075	<0.01	0.042	0.029	0.104	60.00	1.074	0.995
11	29	701.0	26.8	5.73	4.48	41.96	0.121	0.185	0.061	0.049	<0.01	0.024	0.014	0.039	33.85	1.003	1.021
12	38	97.0	22.4	5.21	8.21	37.27	0.144	0.275	0.040	0.045	<0.01	0.020	0.014	0.069	<15	1.129	1.030

* from closest Environment Canada weather station

a insufficient sample for analysis

b data not available

ACID PRECIPITATION MONITORING RESULTS

YEAR: 1990

STATION: FORT CHIPWEYAN

Month	Sample Period (days)	Catch of Precip. (mm)	Total Precip. (mm)	pH	Cond. (us/cm)	Specific Cond. (us/cm)	Acidity (ueq/l)	Total Acidity (ueq/l)	Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Strong Acidity (ueq/l)	Cond. Ratio	Cation/Anion Ratio
1	30	717.0	14.6	5.65	4.21	26.81	0.051	0.051	0.044	<0.01	0.005	0.037	<0.01	0.026	0.013	0.026	0.002	<15	1.071	1.147
2	27	1345.0	13.6	5.38	6.17	21.38	0.065	0.065	0.037	<0.01	0.005	0.037	<0.01	0.026	0.013	0.015	0.002	<15	1.340	0.906
3	30	1220.0	17.6	5.13	5.75	35.14	0.080	0.080	0.040	<0.01	0.002	0.040	<0.01	0.027	0.020	0.017	0.005	<15	1.034	0.979
4	b	b	3.2	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
5	b	b	12.0	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
6	28	3075.0	38.8	5.13	5.09	50.38	0.174	0.101	0.036	<0.01	0.001	0.036	<0.01	0.009	0.024	0.035	0.005	<15	1.169	0.931
7	29	4021.0	35.2	5.03	6.15	89.71	0.182	0.089	0.039	<0.01	0.001	0.039	<0.01	0.009	0.019	0.036	0.005	<15	1.186	0.975
8	30	3016.0	36.0	4.95	6.32	52.04	0.187	0.082	0.035	<0.01	0.001	0.035	<0.01	0.004	0.022	0.037	0.005	<15	1.092	1.109
9	24	3096.0	25.8	5.09	4.63	62.09	0.131	0.039	0.017	<0.01	0.001	0.017	<0.01	0.004	0.013	0.023	0.004	48.48	1.034	1.020
10	6	1237.0	33.0	4.85	9.17	74.50	0.364	0.118	0.049	<0.01	0.003	0.049	<0.01	0.026	0.031	0.063	0.013	64.90	1.061	0.988
11	29	1573.0	60.0	5.21	4.45	52.74	0.173	0.260	0.075	<0.01	0.001	0.075	<0.01	0.037	0.021	0.034	0.007	39.17	1.156	0.770
12	33	1962.0	37.0	5.86	4.70	85.88	0.101	0.125	0.071	<0.01	0.129	0.071	<0.01	0.039	0.022	0.024	0.004	<15	1.203	1.534

ACID PRECIPITATION MONITORING RESULTS

YEAR: 1990

STATION: FORT MACKAY

Month	Sample Period (days)	Catch of Precip. (mm)	Total Precip. (mm)	pH	Cond. (us/cm)	Specific Cond. (us/cm)	Acidity (ueq/l)	Total Acidity (ueq/l)	Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Strong Acidity (ueq/l)	Cond. Ratio	Cation/Anion Ratio
1	b	b	16.4	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
2	b	b	12.4	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
3	b	b	7.1	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
4	b	b	52.5	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
5	b	b	29.5	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
6	b	2833.0	125.4	4.75	10.84	51.15	1.538	<0.01	0.087	<0.01	<0.01	0.087	<0.01	0.013	0.046	0.293	0.044	26.15	1.099	0.984
7	b	b	18.6	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
8	b	b	56.4	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
9	b	b	32.0	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
10	b	b	35.3	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
11	b	b	42.1	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
12	b	b	18.7	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b

* from closest Environment Canada weather station

a insufficient sample for analysis

b data not available

ACID PRECIPITATION MONITORING RESULTS
YEAR: 1990
STATION: FORT MCMURRAY

Month	Days	Sample Period	Catch of Collector	Precip.* (mm)	pH	Specific		Total Acidity (ueq/l)	Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Strong Acidity (ueq/l)	Cond. Ratio	Cation/ Anion Ratio
						Conc. (us/cm)	Conc. (us/cm)													
1	29	92.0	16.4	5.11	8.07	31.19	0.135	0.167	0.018	0.058	<0.01	0.036	0.007	0.043	0.009	0.009	17.71	1.072	0.963	
2	27	161.0	12.4	7.12	53.70	13.20	0.665	0.239	0.012	0.414	<0.01	0.039	0.027	0.525	0.244	<15	1.218	1.341		
3	32	95.0	7.1	6.91	37.80	a	0.573	0.111	0.017	0.265	<0.01	0.024	0.008	0.300	0.148	a	1.192	1.222		
4	30	1022.0	52.5	5.12	8.08	38.20	0.666	0.362	0.140	0.056	<0.01	0.035	0.012	0.116	0.030	26.30	1.010	1.011		
5	b	b	29.5	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	
6	77	3677.0	125.4	4.83	8.90	45.53	1.081	0.557	0.040	0.068	<0.01	0.013	0.041	0.138	0.030	17.31	1.129	0.938		
7	b	b	18.6	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	
8	50	2589.0	56.4	4.95	7.14	41.63	0.482	0.214	0.014	0.036	<0.01	0.017	0.006	0.080	0.020	<15	1.069	0.919		
9	29	838.0	32.0	4.90	14.40	34.31	0.906	0.276	0.092	0.033	<0.01	0.176	0.015	0.107	0.023	<15	1.021	0.999		
10	28	372.0	35.3	5.26	6.97	48.60	0.271	0.176	0.047	0.207	<0.01	0.139	0.072	0.039	0.010	42.10	0.953	1.039		
11	32	246.0	42.1	6.36	7.72	28.13	0.312	0.436	0.039	0.270	<0.01	0.187	0.095	0.127	0.031	<15	1.039	0.842		
12	21	52.0	18.7	4.63	13.70	a	0.122	0.246	0.016	0.056	<0.01	0.031	0.007	0.015	0.003	a	1.094	0.961		

ACID PRECIPITATION MONITORING RESULTS
YEAR: 1990
STATION: FORT VERMILION

Month	Day	Sample Catch of Period Collector (ml)	Total Precip. (mm)	pH	Specific Cond.		Total Acidity (ueq/l)	Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Strong Acidity (ueq/l)	Cond. Ratio	Cation/Anion Ratio		
					(us/cm)	(us/cm)															
1	16	199.0	36.1	5.29	3.32	28.94	0.072	0.071	<0.01	0.042	<0.01	0.013	<0.01	0.016	<0.01	0.016	<0.01	<15	1.155	0.808	
2	33	137.0	16.4	5.09	5.50	16.90	0.060	0.067	0.002	0.025	<0.01	0.016	0.004	0.013	0.002	<15	1.134	0.964			
3	28	206.0	14.0	5.05	5.81	32.06	0.043	0.088	0.006	0.023	<0.01	0.013	0.002	0.016	0.002	<15	1.046	1.050			
4	28	275.0	20.8	4.97	10.74	45.10	0.270	0.139	0.028	0.029	<0.01	0.012	0.007	0.030	0.007	16.10	1.021	1.001			
5	31	936.0	36.9	5.35	11.08	60.20	0.757	0.477	0.211	0.039	<0.01	0.027	0.034	0.170	0.023	<15	1.004	1.029			
6	34	707.0	53.6	5.37	5.94	40.60	0.432	0.210	0.036	0.061	<0.01	0.034	0.093	0.111	0.020	<15	1.153	1.013			
7	27	2502.0	81.0	5.44	2.51	42.21	0.160	0.132	<0.01	0.024	<0.01	0.009	0.009	0.009	0.008	31.85	1.135	0.992			
8	31	3364.0	64.8	5.53	1.86	26.20	0.054	0.115	<0.01	0.019	<0.01	<0.01	<0.01	<0.01	0.019	<0.006	<15	1.133	0.741		
9	28	2801.0	20.4	5.17	3.11	60.55	0.058	0.036	<0.01	0.007	<0.01	0.002	<0.01	0.006	<0.01	26.82	0.957	0.831			
10	38	1017.0	68.4	5.15	6.33	46.66	0.303	0.463	0.124	0.053	<0.01	0.060	0.016	0.077	0.014	40.35	1.043	0.988			
11	28	768.0	53.3	5.22	3.90	48.19	0.109	0.196	<0.01	0.031	<0.01	0.015	0.005	0.013	<0.01	40.43	1.226	0.691			
12	b	b	32.9	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	

* from closest Environment Canada weather station
a insufficient sample for analysis
b data not available

ACID PRECIPITATION MONITORING RESULTS
YEAR: 1990
STATION: HIGH PRAIRIE

Month (days)	Sample Catch of Period Collector (ml)	Total Precip. (mm)	pH	Cond. (us/cm)	Specific Acidity (ueq/L)	Total Acidity (ueq/L)	Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Strong Acidity (ueq/L)	Cond. Ratio	Cation/Anion Ratio
1	30	642.0	18.8	5.77	2.83	26.52	0.038	0.038	0.031	0.012	0.011	0.002	0.006	0.007	<0.01	<15	1.084	0.991
2	27	375.0	21.2	6.12	4.86	38.01	0.130	0.089	0.022	0.056	0.042	0.053	0.021	0.086	0.011	<15	0.864	1.117
3	31	200.0	10.0	5.28	4.85	37.99	0.047	0.049	0.012	0.009	<0.01	0.003	0.003	0.011	0.002	<15	1.092	1.023
4	29	707.0	35.8	4.99	7.38	51.40	0.346	0.128	0.024	0.074	<0.01	0.043	0.020	0.059	0.007	40.30	1.042	0.948
5	30	328.0	20.8	5.34	15.00	73.07	0.629	0.341	0.188	0.059	0.016	0.014	0.077	0.102	0.017	62.06	0.937	0.973
6	15	1075.0	88.4	6.00	2.68	34.97	0.245	0.291	0.067	0.034	<0.01	0.009	0.088	0.064	0.013	28.87	1.174	0.765
7	30	422.0	83.8	5.10	9.84	54.42	1.012	0.820	0.241	0.106	<0.01	0.028	0.132	0.292	0.051	<15	1.065	1.147
8	34	801.0	104.8	6.26	5.88	44.74	0.871	0.419	0.431	0.111	0.150	0.024	0.132	0.116	0.035	<15	1.080	0.904
9	32	260.0	15.6	6.17	8.41	52.67	0.178	0.120	0.111	0.019	0.022	0.005	0.024	0.038	0.009	39.38	1.033	1.210
10	30	1030.0	46.2	5.99	16.60	216.90	0.277	0.084	<0.01	0.271	<0.01	0.017	0.658	0.647	0.187	<15	1.411	3.867
11	29	1047.0	25.8	6.87	23.60	47.64	0.127	0.119	0.064	0.055	0.029	0.015	0.128	0.792	0.090	<15	1.432	3.315
12	30	298.0	19.2	7.47	110.50	68.42	0.324	0.120	<0.01	0.031	0.144	0.014	0.272	b	0.619	41.20	1.484	4.849

ACID PRECIPITATION MONITORING RESULTS
YEAR: 1990
STATION: KANAWASKIS

Month (days)	Sample Catch of Period Collector (ml)	Total Precip. (mm)	pH	Cond. (us/cm)	Specific Acidity (ueq/L)	Total Acidity (ueq/L)	Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Strong Acidity (ueq/L)	Cond. Ratio	Cation/Anion Ratio
1	31	603.0	28.2	5.89	3.10	27.92	0.067	0.126	0.012	0.018	<0.01	0.008	<0.01	0.042	0.008	<15	1.164	0.944
2	28	502.0	19.0	5.25	4.24	24.88	0.052	0.107	0.002	0.014	<0.01	0.005	<0.01	0.026	0.005	<15	1.095	0.922
3	31	440.0	20.0	5.34	5.23	34.41	0.113	0.159	0.025	0.026	<0.01	0.014	<0.01	0.039	0.009	<15	1.002	0.961
4	30	1913.0	68.2	4.96	7.32	36.80	0.628	0.421	0.177	0.027	<0.01	<0.01	<0.01	0.029	0.007	<15	0.989	0.920
5	31	5868.0	140.6	5.09	6.93	45.05	1.441	0.903	0.301	0.065	<0.01	0.045	0.032	0.247	0.028	<15	0.990	0.965
6	30	3190.0	95.9	5.13	5.44	33.73	0.382	0.489	0.084	0.039	<0.01	0.010	0.017	0.101	0.026	28.01	1.058	0.910
7	31	3372.0	111.2	4.72	11.78	66.04	1.424	0.844	0.219	0.042	<0.01	<0.01	0.027	0.163	0.031	20.47	1.056	1.000
8	31	1933.0	67.9	5.00	8.22	54.60	0.674	0.487	0.153	0.056	<0.01	0.010	0.018	0.135	0.022	<15	1.041	1.038
9	30	409.0	14.9	5.52	5.49	56.45	0.129	0.080	0.011	0.010	<0.01	0.003	0.004	0.065	0.013	<15	1.024	1.234
10	32	2964.0	108.7	5.39	3.45	37.93	0.224	0.483	0.021	0.103	<0.01	0.043	<0.01	0.113	0.016	<15	1.124	0.867
11	30	2134.0	86.5	5.39	3.45	37.93	0.182	0.393	0.017	0.084	<0.01	0.035	<0.01	0.092	0.013	<15	1.124	0.867
12	31	603.0	39.1	5.16	4.95	47.39	0.088	0.283	0.013	0.047	<0.01	0.023	<0.01	0.046	0.005	38.79	1.079	0.896

* from closest Environment Canada weather station

a insufficient sample for analysis

b data not available

ACID PRECIPITATION MONITORING RESULTS

YEAR: 1990

STATION: RED DEER

Month	Period (days)	Sample Catch of Collector (ml)	Total Precip.* (mm)	Specific		pH	Total										Strong		Cation/Anion Ratio
				Cond. (us/cm)	Acidity (ueq/l)		Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Acidity (ueq/l)	Cond. Ratio		
1	34	a	10.6	a	a	a	a	a	a	a	a	a	a	a	a	a	b	b	
2	23	108.0	10.0	5.46	5.73	25.51	0.055	0.099	0.030	0.014	<0.01	0.005	<0.01	0.015	0.002	<15	1.042	0.966	
3	33	235.0	16.3	5.98	7.15	25.87	0.181	0.156	0.122	0.021	<0.01	0.004	0.003	0.021	0.004	<15	0.959	1.126	
4	36	381.0	48.6	6.18	8.85	35.30	0.771	0.470	0.398	0.039	<0.01	0.016	0.006	0.149	0.025	<15	0.976	1.156	
5	23	2234.0	80.7	6.06	7.95	49.32	1.101	0.899	0.508	0.059	<0.01	0.097	0.036	0.194	0.028	26.64	0.988	1.055	
6	34	3000.0	178.0	5.39	6.74	42.59	1.456	1.248	0.288	0.112	<0.01	0.036	0.075	0.294	0.053	<15	1.302	0.821	
7	27	1763.0	107.3	5.25	11.07	50.06	2.115	1.361	0.528	0.077	<0.01	0.023	0.047	0.527	0.088	<15	1.021	1.028	
8	31	1333.0	50.6	4.90	10.75	43.82	0.751	0.456	0.138	0.029	<0.01	0.012	0.012	0.124	0.022	<15	1.058	0.950	
9	32	102.0	4.1	4.90	8.91	74.92	0.057	0.044	<0.01	0.004	<0.01	0.003	0.002	0.019	0.004	29.24	0.872	0.961	
10	29	484.0	19.2	5.33	5.16	58.40	0.128	0.127	0.046	0.006	<0.01	0.002	0.002	0.025	0.005	43.90	1.003	1.025	
11	33	421.0	18.8	5.40	7.21	101.10	0.135	0.243	0.074	0.015	<0.01	0.005	0.004	0.040	0.010	94.77	1.041	1.090	
12	28	128.0	31.3	5.51	5.26	56.21	0.191	0.182	0.091	0.036	<0.01	0.013	0.021	0.033	0.063	44.40	1.076	1.103	

ACID PRECIPITATION MONITORING RESULTS

YEAR: 1990

STATION: SUFFIELD

Month	Period (days)	Sample Catch of Collector (ml)	Total Precip. * (mm)	Specific		pH	Total										Strong		Cond. Cation/Anion Ratio
				Cond. (us/cm)	Acidity (ueq/l)		Sulphate (kg/ha)	Nitrate (kg/ha)	Ammonium (kg/ha)	Chloride (kg/ha)	Phosphate (kg/ha)	Sodium (kg/ha)	Potassium (kg/ha)	Calcium (kg/ha)	Magnesium (kg/ha)	Acidity Ratio (ueq/l)			
1	31	144.0	14.5	6.27	13.00	30.64	0.233	0.300	0.111	0.044	<0.01	0.037	0.026	0.068	0.017	<15	1.062	1.090	
2	28	68.0	5.0	5.93	a	15.85	0.038	0.057	0.014	0.008	<0.01	0.004	0.002	0.014	0.004	<15	b	0.963	
3	31	665.0	29.0	5.72	6.30	29.54	0.152	0.265	0.095	0.026	<0.01	0.014	0.004	0.042	0.008	15.02	0.969	1.052	
4	30	921.0	22.8	6.12	7.38	28.70	0.227	0.244	0.114	0.023	<0.01	0.012	0.012	0.067	0.014	<15	1.045	1.102	
5	31	782.0	55.2	6.31	11.38	59.18	0.767	0.850	0.332	0.107	<0.01	0.138	0.065	0.352	0.070	50.40	1.055	1.300	
6	30	971.0	28.6	5.70	27.70	101.90	0.411	0.376	0.640	0.089	0.258	0.039	0.190	0.103	0.039	<15	1.400	1.962	
7	31	1730.0	46.4	5.91	8.08	56.75	0.500	0.530	0.293	0.045	0.050	0.035	0.031	0.105	0.030	<15	1.012	1.136	
8	31	16.0	23.6	4.91	a	a	0.995	a	0.430	0.151	<0.01	0.090	0.125	a	a	a	b	b	
9	30	141.0	1.2	5.18	72.20	129.60	0.080	0.039	0.024	0.011	0.074	0.004	0.016	0.015	0.006	79.24	1.449	0.646	
10	31	108.0	15.2	5.90	a	69.50	0.326	0.378	0.105	0.033	<0.01	0.043	0.035	0.164	0.051	51.40	b	1.465	
11	30	354.0	43.3	6.07	4.64	36.87	0.212	0.387	0.031	0.029	<0.01	0.013	0.015	0.119	0.071	31.55	1.036	1.060	
12	31	235.0	21.5	5.46	8.79	72.89	0.379	0.246	0.004	0.019	<0.01	0.061	0.037	0.151	0.058	59.14	0.881	1.328	

* from closest Environment Canada weather station

a insufficient sample for analysis

b data not available

REFERENCES

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